

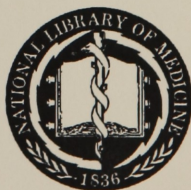
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Worth B. Daniels, M.D.



To Murchison

with the kind regards,

the Author

4.

REPORT

OF THE

COMMITTEE ON "SPOTTED FEVER, SO-CALLED."

BY

JAMES J. LEVICK, M.D.,

ONE OF THE PHYSICIANS OF PENNSYLVANIA HOSPITAL; ONE OF THE PHYSICIANS OF WILLS' HOSPITAL,
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REPORT OF THE COMMITTEE ON "SPOTTED FEVER, SO-CALLED."

To the American Medical Association:—

THE Committee on "Spotted Fever, so called," beg leave to offer the following report:—

Soon after their appointment the Committee addressed a number of questions to the members of the profession, soliciting information on the subject which had been referred to them. Through the kindness of the editors of medical journals, these were extensively published. Replies to them have been received from the following gentlemen: Prof. Traill Green, of Easton, Pa.; Dr. A. Douglas Hall, of Philadelphia; Dr. D. Webster Prentiss, of Washington, D. C.; Dr. John Swain, of Ballardsville, Ky.; Dr. W. M. Eaton, of Peoria, Ill.; Dr. J. L. Mills, of Millborn, Ill.; and Dr. A. G. Field, of Des Moines, Iowa.

Pamphlets on this subject have been received from Dr. J. B. Up- ham, of Boston, Mass.; Dr. David Crary, of Wallingford, Vt.; and Dr. Wm. H. Draper, of New York.

The Committee avail themselves of this opportunity to offer their grateful acknowledgments to the writers for the interesting and instructive information contained in these papers. The letters will be found appended to this report.

The questions referred to are as follows:—¹

1. When did "spotted fever, so called," appear in your neighborhood, and how long did it prevail there?

2. What were the usual symptoms of the disease, and what unusual symptoms occurred in your practice?

3. Did it attack many individuals at the same time, and was it materially modified by the age, sex, or temperament of the patient?

4. What was the ordinary duration of the disease? Were relapses or second attacks common?

¹ See Trans. Provincial Med. Association, vol. 6. London, 1838.

5. Are you in possession of any proof that the disease was communicated from one person to another?

6. What appeared to be the predisposing and what the exciting causes of the disease?

7. What complications and what sequelæ of this disease came under your notice?

8. What other disease prevailed at or near the same time that spotted fever did, and what epidemic diseases followed it?

9. What was your mode of treating this disease?

10. What was the proportion of deaths to the whole number of persons attacked, and what was the usual manner of fatal termination?

11. What were the *post-mortem* appearances?

12. Were any microscopic observations made, and what were they?

13. Has the disease prevailed in your neighborhood in former years?

At a meeting of the Philadelphia College of Physicians, held April 1, 1863, Dr. William Gerhard, who thirty years before had so ably demonstrated the distinctive phenomena of typhus and typhoid fevers, begged leave to direct the attention of the College to the prevalence in Philadelphia and its vicinity of a disease presenting symptoms of an unusual character, and in many instances proving rapidly fatal.¹ Dr. Gerhard was disposed to regard this as

¹ The symptoms, as given by Dr. Gerhard, may be thus briefly enumerated. They occurred most frequently to those whose ages were between 15 and 25 years, but were by no means confined to these ages. There was sudden and intense pain in the head and back, with occasional delirium. Nausea and vomiting were present from the first. On the second day, sometimes earlier, an eruption appeared over the whole body; in some instances it was first noticed after the death of the patient. This eruption was in the form of spots, and varied in size from a pin's head to an inch or more in breadth. It was of a purple color, not in the slightest degree affected by external pressure, and was evidently due to an effusion of blood in the midst of the true skin. There was no diarrhœa, but moderate heat and fever; the tongue was scarcely coated. Death took place in periods varying from twenty-six hours to four days, the patient sinking into a state of coma. After death no distinctive lesion was found. The brain was congested with blood, the veins containing an unusual quantity of it. At the base was noticed an effusion of a few ounces of serum; the ventricles contained a moderate quantity of serum, but there was not a trace of any lesion produced by inflammation. The lungs, at their posterior portion, were congested, but were crepitant, and in other respects were healthy. The right cavities of the heart contained a considerable quantity of dark, fluid blood, with a very small and flaccid coagulum. The left ventricle was empty. In one case, on the pericardial covering of the left ventricle were

a disease appearing for the first time in America, but a careful investigation soon enabled him to identify it with an affection known as *Spotted Fever*, which had prevailed in New England during the early part of this century, and which had been fully described by the medical writers of that day. According to Dr. Gerhard, at least two hundred persons perished of this disease in Philadelphia during the months of February and March, 1863. In the course of his remarks, Dr. G. referred to an account of "two cases of anomalous disease" which had been read by Dr. David Crary (formerly of Hartford, Conn., now of Wallingford, Vt.) before the Connecticut Medical Society, held at Bridgeport, May, 1862. These cases, reported in full in the "Transactions" of the Society, a copy of which has been kindly furnished the Committee by Dr. Crary, were undoubtedly identical in character with those seen by Dr. Gerhard, and, so far as the Committee can ascertain, were the first reported of this disease in the present decade.

In the *Boston Medical and Surgical Journal*, April 6, 1863, a few days after Dr. Gerhard's paper had been read, and before it had been printed, there was published, under the title of "Hospital Notes and Memoranda illustrative of Congestive Fever, so called, or Epidemic Cerebro-Spinal Meningitis," an account of an epidemic which occurred in the winter and spring of 1862-63 in the camps in and around Newbern, N. C. This was an able and interesting essay by Dr. J. Baxter Upham, Surgeon in charge of Stanly General Hospital, 18th Army Corps, well known to the profession as the author of a valuable paper on Typhus Fever.¹

noticed two large ecchymoses. Similar spots were noticed in the stomach, and in one of the patches of Peyer. No other unusual conditions were discovered.

¹ See *Boston Medical and Surgical Journal*, xxxvii. 16, 34, &c.—The symptoms of this disease, as described by Dr. Upham, were, a sudden attack of pain in the back part of the head, excruciating pain in the back and limbs, with sometimes rigors and nausea and vomiting. A peculiar stiffness of the muscles of the face and neck was often an early symptom. Petechiæ were not unfrequent, persistent on pressure, and varying in size. So, too, were purpuræ spots, always a grave symptom. The cases were most numerous between the ages of seventeen and twenty-three years. The duration of the disease was from a period of less than thirty-six hours to six weeks or even longer. After death, great lividity of the body was noticed, passive congestions of the lungs, spots of discoloration on the lungs, in some instances resembling pulmonary apoplexy. Diffuent lymph was found in the pericardium; in other instances sero-purulent fluid, holding in suspension masses of flocculent lymph. Deposits of lymph were noticed in the endocardium and the knee-joints. Within the cranium were found opalescence of the arachnoid; increased vascularity of the membranes of brain and spinal

Other reports, analogous to that of Dr. Gerhard and that of Dr. Upham, were soon published, from which it became evident that a disease presenting unusual phenomena was then prevailing in the United States, in districts of country widely remote from each other.

A superficial glance at these papers might seem to indicate that two epidemic diseases were prevailing, one described as "*Spotted Fever*," and the other as "*Epidemic Cerebro-Spinal Meningitis*." A more careful study of them could not fail to determine that these so called two epidemics were in reality but one form of disease, identical in nature, though characterized at times by the predominance of one set of phenomena or of another. Dr. Henry Hartshorne, of Philadelphia, at a meeting of the College of physicians, held Oct. 7, 1863, directed attention to the identity of the *spotted fever* then prevailing and the disease described by M. Boudin and others under the title of *epidemic cerebro-spinal meningitis*. This identity, which appears to have been early noticed by other members of the profession in different parts of the country, was corroborated by the statements of Drs. Condie, Stillé, and others, of Philadelphia. Indeed, there would seem to have been little or no difference of opinion on this subject among physicians. A very earnest discussion, however, arose in reference to the appropriateness of the name *cerebro-spinal meningitis*, one class objecting to the term meningitis as giving an erroneous impression of the nature of the disease, another urging its adoption as indicating its most constant and characteristic phenomenon. The Committee desire again to state that a most careful examination of the whole subject—a comparison of the phenomena of spotted fever, as described by writers in the early part of this century in this country, with those recorded by an immense number of European authors—has left them without a doubt that the spotted fever of North, Gallup, Strong, and Gerhard is the epidemic cerebro-spinal meningitis of Boudin and Forget of France, and of Ames, Upham, and others of this country. The Committee have already alluded to the fact that more than one of the older native writers had described, under the name of spotted or petechial fever, a disease which it has been stated corresponds with that now under consideration. To do

cord; a large increase of serum in the subarachnoid space and in the ventricles, clear or turbid, and mixed with flocculi of lymph; with an abundant exudation of thick, yellowish, apparently semi-organized lymph at the base of the brain and in the medulla oblongata.

justice to these authors, it will be necessary to give a brief historical sketch of this disease as it has existed in America from the early part of the present century.

The first occurrence of spotted or petechial fever¹ in this country which excited alarm, was at Medfield, Massachusetts, in the year 1806, and again in Litchfield County, Connecticut, A.D. 1807. The disease continued in Connecticut in 1808 and 1809. In the winter of 1809-10 it appeared at Worcester, Massachusetts, and in other towns in that State. About this time it was noticed in different places in the State of New York, and also to some extent in New Hampshire and Vermont. The symptoms, as given by Drs. Gallup and North, which correspond entirely with those already named, will be found below.² The alarm created by the ravages of this disease soon led to the appointment of a committee, by the Counsellors of the Massachusetts Medical Society, March 27, 1810. This

¹ Called also "Sinking Fever." See Report on Climatology, &c., by Dr. D. F. Catlin. (Trans. Am. Med. Association, Vol. 15, 1865.)

² Dr. Gallup says of spotted fever: "The most constant symptom is a pain in the forehead between the eyes. . . . The access is very sudden. Without previous notice the system is thrown into great distress and pain, . . . sometimes in the head, frequently followed by coma and delirium. The pain is shifting. . . . When the force of the disease falls on the head it is attended with more or less defect of sight or hearing, . . . double vision in some instances. Convulsions sometimes usher in the disease. Opisthotonos sometimes comes on toward the close of the disease. The tongue is moist, with a thin white coat. The heart may be the seat, of the disease, or the stomach. Strangury often attends this disease. An extreme soreness and tenderness in the muscles is a frequent symptom. The joints are sometimes affected with swelling and extreme soreness resembling rheumatism. The eruptions, which are not always present, appeared at different periods of the disease, . . . most commonly on the second day. They sometimes resemble petechiæ, . . . are very numerous; sometimes in blotches . . . they were of uncertain duration. The true petechiæ were the most durable; and in some fatal cases continued . . . even after death . . . these spots found after death on the external and internal coats of the stomach, intestines, diaphragm, thorax, &c. The bloodvessels of the brain, especially the veins, are very turgid. The membranes of the brain exhibit different degrees of inflammation, according to the term of sickness and degree of local affection of the brain. The thorax exhibits very similar traits of membrane inflammation. . . . The heart is the seat of inflammation, its outer coat frequently covered with extravasated lymph," &c. &c. He says: "In spotted fever it is very difficult to fix on any one particular organ as its place of constant habitation. As the eruption upon the surface is sometimes universal, so the affection of all the internal membranes is sometimes discoverable. It might be called the *mocking fever*, as it assumes the mask of most others." Dr. North, of Goshen, Connecticut, February, 1811, describes the disease in much the same words, and mentions soreness of the throat as a frequent concomitant of the disease.

committee, consisting of Drs. Thomas Welsh, James Jackson, and John C. Warren, one of whom still survives, presented an elaborate and almost exhaustive report, which is given in full in the *Massachusetts Medical Communications*, vol. 2, p. 111, Boston, 1813.¹

Continuing for a few years in New England, it is said that spotted fever subsequently entered New York and the Canadas. It then paused, but pursued soon after a direct course through the interior of Pennsylvania, invaded Ohio and Kentucky, next occurred in Northwestern Virginia, and later extended to the southern extremity of the United States. It entered Philadelphia in the latter part of the winter of 1813, but did not long remain, in consequence, it is said, of the mild weather; but it returned in the following winter with great violence.²

While we have but little recorded of it for some years after it seems to have thrown its mantle over nearly all diseases prevailing for many subsequent years, and if not the chief disease, it yet formed no mean constituent of the great typhous epidemic which prevailed in the Eastern and Middle States until the year 1820. In the Southern States this disease was known by the name

¹ Without quoting their description of spotted fever, which is the same as that given by Gallup, the Committee cannot refrain from giving a synopsis of the appearances found after death from this disease, as reported by these gentlemen. "These are a formidable livid color of the skin, diffused or in spots. Where the cuticle has been removed by vesication, the skin is almost black, and often covered with fluid blood. When the cranium is separated from the dura mater this membrane usually discharges a considerable quantity of blood. As soon as the dura mater is cut through, a quantity of serous fluid commonly escapes from under it, and the whole surface between the dura mater and tunica arachnoides is found moist with the same fluid which is sometimes quite red-colored. . . . An opaque substance found between the arachnoid and pia mater may be called coagulated lymph. . . . Pus is sometimes found." Dr. North, in a duodecimo volume of 249 pages "On Spotted Fever," written at Goshen, Connecticut, February, 1811, after describing the symptoms already given, directs attention to a drawing back of the head with a kind of clonic spasm of the muscles of the neck, &c. Dr. Job Wilson, in a work on spotted fever, published at Boston, A. D. 1815, not only refers to these symptoms observed during life, but also gives drawings (rude, it is true) representing the appearances found after death, in the brain and its appendages. The committee have directed attention to this subject, as an opinion seems to prevail that the complication of cerebral disease in spotted fever is a discovery of modern times.

² Much difference of opinion still exists among the older physicians of Philadelphia respecting the nature of the epidemic whose history is given in the text, some declaring it to have been true typhus fever, and others with equal positiveness asserting that it was the Spotted Fever which had been described by North and other New England writers.

of the *cold plague*, *pneumonia typhoides*, and later by that of *cerebro-spinal meningitis*. Cases are reported by Dr. J. W. Richardson and others of its occurrence in Louisville, Kentucky, in December, 1842, and in Rutherford County, Tennessee, in the year 1845. In the same year it visited Southern Illinois; in 1847 Vicksburg; in 1846-7 Arkansas. In the winter and spring of 1848 it prevailed with great intensity in Montgomery, Alabama. An elaborate account of this epidemic is given by Dr. S. Ames of that place. In this paper the whole subject of cerebro-spinal meningitis is considered with a minuteness and accuracy which are highly commendable, and which cannot fail to rank its author among the most careful of medical observers. The paper is published in pamphlet form of fifty-eight pages; a synopsis of it may also be found in the *New Orleans Medical and Surgical Journal*, Nov. 1848, p. 295. In the town of Montgomery and its immediate vicinity, out of a population of four thousand, two hundred and fifty cases of this disease occurred, with a mortality of 60 per cent. In the same journal, a few months earlier, was published a melancholy history of the "Cold Plague," as it prevailed in the 2d Regiment Mississippi Rifles when encamped at Vicksburg on their way to Mexico. The report is by Dr. Thomas N. Love, surgeon to the regiment, and it appears that the deaths by this disease decimated the regiment.

From 1848 to 1850 it prevailed in the southwestern part of Pennsylvania. In 1849 Dr. A. P. Stone declared it epidemic in Auburn, Mass., with uniform fatality. It is recorded as occurring in Middlebury, Mass., about this time, and described as "an anomalous disease entirely unknown to the older doctors." In 1850 it prevailed in Cayuga County, N. Y., and Dr. Fenner reported its occurrence at New Orleans. In the year 1856 Dr. J. J. Summerel, of Salisbury, N. C., states that it occurred epidemically under his notice. In the year 1857 it raged with great violence in the counties of Onondago and Chemung, N. Y.

Beginning with the present decade, spotted fever appeared in Northern and Central Missouri in the winter of 1861-62; in March, 1862, in Connecticut; in February, 1862, at Louisville, Kentucky; in the spring of 1862, at Castleton, Indiana; in the fall of 1862, among the negroes brought to Memphis by the United States troops; in the winter of 1862-63, among the United States soldiers at Newbern, N. C.; in January, 1863, it prevailed with great fatality at the Naval Academy at Newport, R. I. About this time it appeared in Philadelphia and its vicinity as before reported.

Ohio, Illinois, and other Northwestern States were visited soon after. In the winter and spring of 1864 it prevailed to a limited extent in the city of New York and in New Jersey, and with terrible fatality at Carbondale, Luzerne Co., Pa. In February, 1864, it appeared among the soldiers at Chattanooga and at Danville, Ky. In the spring of 1864 it occurred in Maryland, and to a considerable extent in Washington, D. C., in the months of July and August of the same year. About this time the disease was reported at Palmer, Mass., and at Brattleboro, Vermont, and the vicinity of Boston. During the past year it has lingered, though with diminished intensity, in some of the localities before mentioned, and occasional, unofficial notices of its prevalence have appeared in the newspapers of the day. During the last few years the publication of the Southern Medical Journals was temporarily suspended and the Committee have been without information of its existence in the Southern States. Recently they have learned from an interesting paper on "Epidemic Cerebro-Spinal Meningitis," by Dr. Gaillard, published in the *Richmond Medical Journal* for March, 1866, that "during the late war severe epidemics of this disease visited Bowling Green, Grenada, Mississippi, New Orleans, Mobile, and Charleston. Around Richmond and in different parts of Virginia the disease prevailed with great malignity."

It will thus be seen that spotted fever or epidemic cerebro-spinal meningitis has prevailed in America with but slight interruption for at least sixty years, that it has extended to almost every part of our country, and that its results have been of the gravest character. Nor has it been confined to this continent.¹

In the year 1805, almost coincidently with its appearance in New England, spotted fever or epidemic cerebro-spinal meningitis, made

¹ Dr. Gallup (op. cit., page 223) says of spotted fever: "In A. D. 1505 it is represented as overspreading Europe. In 1528 it again invaded Europe, followed by the plague. And again in England and France in 1556. And in Spain in 1557, as mortal as the plague. Spotted fever was in many places in 1564. From 1569 to 1574 the spotted or petechial fever prevailed in Europe with much mortality, and was followed by the plague. Spotted fever at Trent, in 1591; and in 1592 at Florence. In Europe in 1624. In Italy in 1691 and 1693. In England in 1698. In Prussia in 1704. In England in 1710 and 1714. In Piedmont in 1720. In Egypt in 1760." M. Broussais says that this disease has prevailed epidemically in different countries in Europe, chiefly in the years 1503, 1510, 1517, 1545, 1553, 1559, 1571, 1580, 1582, 1616, 1661, 1757, 1788, 1805.

While the Committee do not doubt that some of these epidemics were those of typhus fever, there is reason to believe that others were genuine spotted fever.

its appearance in Geneva, Switzerland, and prevailed with great violence. Coming unheralded, its early victims were at once struck down with extreme prostration and perished in a few hours. The same peculiarities which have since attended its march in this country obtained in Europe. Hufeland observed the same epidemic in the Prussian army, in the year 1806-7. In 1807 it was seen in Briancon;¹ in 1811 at Dantzic; in 1813 at Brest; in 1814 at Mayence; in 1814 at Paris, at Grenoble, and at Pont a Mousson; in 1815 at Metz; in 1816 in the Bavarian garrison of Sarreguemines; in 1823 at Mans. In the year 1830 it appeared at Sunderland, a town on the northeast coast of England, thirteen miles from Durham. Imperfect records of its occurrence in the year 1833 exist, but nothing is known of it accurately at this time until it appeared in, and traversed France in two great tracts from south to north along the eastern and western border.

After having attacked in 1839 a number of villages, such as Nimes, Avignon, and Toulon, in 1840 it appeared in the garrison of Douera, in Algeria. In the same year its ravages were felt in the kingdom of Naples, and in the States of the Church. In 1844 it showed itself in the civil population of Gibraltar, and in the following year it was seen at Philippeville, in Algiers, where it was chiefly prevalent among the Maltese porters, beginning with those who discharged the ships. In 1845 it again prevailed at Douera, and about this time it also showed itself in Ireland in the work houses there, and in Edinburgh. In 1846 it was at Toulon. From this time to 1850 it prevailed in a great number of localities. It attacked the French soldiers in Italy in 1849 and '50. In Algiers it extended even to Sahara. From 1845 to '48 it raged with great violence in Denmark. In 1854 it first was noticed in Sweden, and spread slowly up to the year 1861, in which year also it prevailed in Portugal. When it ceased in Sweden it appeared in isolated cases in Norway,² and almost simultaneously in the Hollandish

¹ In the Medico-Chirurgical Transactions, vol. 2, London, 1813, may be found an account of a "singular and fatal disease," reported by Mr. Henry Gervis, of Ashburton, occurring March, 1807, which has many points of resemblance to spotted fever.

² In the year 1859, after the month of April, an epidemic of malignant dysentery prevailed in the southern part of Norway. Of a population of 11,600, upwards of 2000 were attacked, of whom 400 died. Among the complications of the disease are noted, swellings of the parotid, a petechial eruption, and in two cases an erythematous eruption. Acute rheumatism of a mild type was of frequent concurrence, though this is a very rare disease in the district of country.

troops at Arnheim. In Feb. 1864, it began in Bromberg about one hundred miles from Dantzic whence it reached that city and spread extensively over Northern Germany. "In a limited district on the borders of the Vistula, while relapsing fever prevailed at St. Petersburg, this disease was extremely destructive."

It would extend this report greatly beyond its proper limits were the geographical history of this disease continued in all its minuteness down to the present time. As in this country so throughout Germany and in other places on the continent of Europe the journals of the first half of the present decade are full of histories of spotted fever. The Committee herewith subjoin a table illustrating its prevalence in Germany during the time referred to, its mortality and the diseases occurring coincidently with it. (Meissner, *Epidemische Cerebro-Spinal Meningitis*. Schmidt's Jahrbücher, Band 129. Jahrgang 1866, Nr. 1.)

Pneumonia and pleuritis prevailed to a great extent in the preceding year. No similar epidemic had occurred in Norway since the year 1808, 1809, and 1810, when a severe dysentery devastated the southern part of that kingdom.—*On the Epidemic of Dysentery in the Kragen Medical District in 1859, by Dr. C. Homan and C. Hartwig—from Norwegian Magazine Med. Sciences—Brit. and Foreign Med. Review, Jan. 1864.*

Time of Year of its Occurrence.—In nearly every instance this disease has presented itself during the cold months of the year, from October to May. Cases, it is true, are on record of its occurrence as late as July and August (see Lidell, &c.); but before this time it had ceased to be regarded as an epidemic, and there is reason to believe that some, at least, of the deaths thus recorded were those of chronic cases originating earlier in the season. The following tables of the number of deaths in Philadelphia, from spotted fever, in each month of the years 1864 and 1865 respectively, fully illustrate and confirm the above statement. The Committee are indebted for these interesting tables to Mr. George E. Chambers, Registrar of the Board of Health of Philadelphia. It will thus be seen that the greatest mortality in any one month took place in March, 1864 (111 deaths); the next in March, 1865 (47 deaths); the lowest mortality in September and October, 1864, and in July and September, 1865.

*Deaths from Spotted Fever, &c., during the Year 1864, in Philadelphia.*¹

(Prepared by GEORGE E. CHAMBERS, Registrar Phila. Board of Health.)

Months.	Spotted.	Petechial.	Malignant.	Typhus.	Cerebro-Spinal Meningitis.	Congestive.	Adults.	Minors.	Total.
January . .	35	2	11	33	...	13	23	71	94
February . .	48	2	19	70	10	11	34	126	160
March . . .	57	7	15	65	32	10	35	151	186
April . . .	32	5	13	30	33	7	34	86	120
May	33	1	9	26	24	12	16	89	105
June	8	...	4	14	9	6	7	34	41
July	4	...	...	12	10	...	13	13	26
August . . .	3	...	3	19	11	7	20	23	43
September .	1	...	...	14	...	1	11	5	16
October . . .	1	1	...	15	3	3	11	12	23
November . .	7	2	2	14	4	4	13	20	33
December . .	11	...	...	23	8	3	23	22	45
	240	20	76	335	144	77	240	652	892

¹ At first much confusion of nomenclature existed, but there is good reason to believe that most, if not all, of the cases reported as petechial, congestive, malignant fevers, and cerebro-spinal meningitis, should be classed with those of spotted fever.

Deaths from Spotted Fever, &c., during the Year 1865.

Months.	Spotted.	Petechial.	Malignant.	Typhus.	Cerebro-Spinal Meningitis.	Congestive.	Adults.	Minors.	Total.
January . .	6	...	2	29	9	5	26	25	51
February . .	15	...	4	44	12	2	38	39	77
March . . .	15	1	4	61	27	5	64	49	113
April . . .	8	...	2	46	20	7	53	30	83
May	6	...	...	25	11	1	26	17	43
June	3	...	...	46	13	7	45	24	69
July . . . .	...	...	...	24	8	2	21	13	34
August . . .	5	...	...	19	5	2	13	18	31
September .	1	...	...	10	6	3	5	15	20
October . . .	1	...	3	13	8	1	12	14	26
November . .	2	...	1	7	7		7	10	17
December . .	1	1	3	10	4	2	5	14	19
	63	2	17	334	130	37	315	268	583

Meteorological Table for January, February, and March, 1863, 1864, and 1865, from Records at the Pennsylvania Hospital.

(Prepared by Mr. AUGUST MÜLLER, Librarian.)

1863.

	January.	February.	March.
Mean temperature (F.) . . .	38.25°	35°	37.26°
Temperature at 9 A. M. . . .	36.01°	33.25°	26.03°
Maximum	63°	55°	67°
Minimum	15°	6°	17°
Water (rain and snow) . . .	4.720	4.680	5.885
Predominating winds	N.W., N.E.	N.W., N.E.	N.W., N.E.

1864.

	January.	February.	March.
Mean temperature	33.28°	35.97°	40½°
Temperature at 9 A. M. . . .	31.25°	33.26°	38°
Maximum	64°	58°	58°
Minimum	9.50°	5°	22°
Water (rain and snow) . . .	1.705		
Predominating winds	N.W., S.W.	N.W., S.W.	Strong E. w'ds.

1865.

	January.	February.	March.
Mean temperature	26.78°	35.29°	47.94°
Temperature at 9 A. M. . . .	25°	35.75°	45.74°
Maximum	52°	54°	73.50°
Minimum	8.50°	3° 5	25°
Water (rain and snow) . . .	3.610	5.825	7°
Predominating winds	N.W.	N.W.	Variable.

The results on page 322 are very similar to those of the following table, given by M. Boudin as the "*résumé* of a considerable number of manifestations of this disease noticed in various places:"—

January	26 cases.	July	9 cases.
February	29 "	August	3 "
March	19 "	September	7 "
April	18 "	October	9 "
May	12 "	November	15 "
June	15 "	December	20 "

The rate of mortality of each month is well shown by the subjoined table from the same source as the last:—

ROCHEFORT.			STRASEBURG.		
	Cases.	Deaths.		Cases.	Deaths.
December	14	14	October, 1840	1	1
January	68	52	November	3	3
February	21	19	December	8	8
March	8	6	January, 1841	34	23
April	3	2	February	43	32
May	3	3	March	65	36
June	1	1	April	29	10
July	1	1	May	9	6
	—	—	June	4	3
Total	119	97	Total	196	122

One epidemic, it is true, is reported to have happened in France, the particulars of which the Committee have not been able to obtain, which it is said occurred in midsummer, so that the surgeons at first mistook the cases for sunstroke.¹

Time of Day.—Much is said by some authors on a special preference exhibited by this disease for certain times of the day in which to make its attack. In the recent epidemic no such decided preference has been observed. If anything of this kind could be noticed, it might perhaps be said that these attacks began rather more frequently in the latter part of the day; not unfrequently in the night.

Mode of Attack.—In every instance coming under the notice of the Committee, the invasion of the disease was a sudden one. An infant who died of spotted fever was as well as usual when put to bed on the preceding night. At 2 A.M. she was seized with a chill, and before 3 P.M. of the same day was dead. A woman, æt. 20, actively employed as cook at a restaurant until 1 A.M., was attacked an hour later, and died at 2 P.M. of the same day.

¹ Dr. Pfeiffer says of spotted fever—"It prefers winter, soldiers and children."

In a third case a woman had made a visit to her friends in the country, partook of the evening meal with them as well as usual, walked a mile to the railway station, reached the city without inconvenience, and, while in the horse cars from the railway terminus to her home, was seized with severe pain in the head, back and extremities, and in a few hours was covered with petechiæ, with other well marked symptoms of spotted fever, which proved fatal three days later.

So, too, Dr. Upham and others report attacks of this disease occurring to soldiers on picket duty. While the Committee do not pretend to deny that there may be individual instances in which this disease may be more gradual in its inception, preceded by *malaise*, or by catarrhal symptoms, as reported by some authors,¹ they believe the suddenness of the attack to be the rule, the prodromes the exception.²

and A feeling of coldness, followed or not by a decided chill, an universal aching of the body, an intense pain in the head and in the back were next complained of. This pain in the head was referred either to the frontal or occipital region. It is well described by the term *atrocious*, which has been applied to it by Valleix. In some instances it would seem to have been a tensive pain, and a common expression of the sufferer was that it felt as if a bar of iron were binding the head. The Committee believe that in some obscure cases of this disease intense cephalalgia, deafness, and a sense of great weariness were the only evidences present, these cases proving fatal in a short time or ending in speedy convalescence.³ This pain in the head was not always present. In a very malignant case, proving fatal in twelve hours, the patient, whose mind was clear to the last, declared her freedom from headache, but complained greatly of distress in the præcordial and epigastric regions, and in the throat. Pains in the knee-joints, resembling those of acute rheumatism, were not unfrequently complained of. In one case seen by the Committee the patient suffered greatly from pain in the calf of the leg.

¹ Guersent says prodromata were not uncommon in the epidemic of Gibraltar.

² Cases are on record in which the patient became blind and raving within half an hour from the beginning of the attack.

³ Since this paragraph was written the following remarks, made of the disease as it occurred at Gibraltar have been met with: "In some cases patients complained only of fatigue, uneasiness, prostration, *ennui*, and were unjustly regarded as malingerers."

Within a few hours from the attack, sometimes simultaneously with it, in other instances on the day following, appeared *the eruption* which has given its name to the disease in this country. This consisted of true *petechiæ*, the plague spots of the older writers. It was not the rubeoloid or mulberry rash of typhus fever, it was not an exanthem, but a true subcutaneous hemorrhage, unaffected by pressure. It is often stated that the eruption of typhus fever is "petechial;" so it sometimes is, and so it may always become. But at first the rash of typhus is due to a hyperæmia of the cutaneous capillaries, and it may never pass beyond this state. More frequently, however, later in the disease, an escape of blood pigment into the cutis occurs, and the rubeoloid rash becomes petechial. But in spotted fever petechiæ are such from the beginning, an extravasation from the first, not a mere conversion, as in typhus. Unlike the rash of typhus, which is rarely seen on the face, the spots of this fever were as frequently noticed there as in other parts. They varied greatly in size, from that of a pin's head to an inch in extent, constituting in this last case true ecchymoses.

In the cases coming under the immediate notice of the Committee, petechiæ were found, when carefully searched for, in every undoubted instance of the disease. This differs greatly from the statements of other observers both in this country and abroad. Not to recur to the reports of Gallup, Strong, and North, and the other earlier observers, in our recent journals numerous individual instances are on record of the absence of this eruption. Especially is this the case in the published reports of the disease as it prevailed of late on the continent of Europe. Yet, upon a careful examination of the records of this disease as it has existed in this country during the present century, the Committee can find no one epidemic of spotted fever in which petechiæ are not referred to as occurring during the prevalence of the disease. It is well known that the mulberry rash of typhus and the *tache rouge* of typhoid fever are occasionally absent, and yet are regarded as characteristic respectively of these diseases. So this petechial eruption, indicative as it is of an altered condition of the life fluid, though not always present, nor peculiar to spotted fever, must yet be regarded as one of its most characteristic phenomena.¹ Besides the petechial eruption, a true exanthem was noticed in a few cases. This was irregu-

¹ Dr. Wales, U. S. N., in describing this disease as it prevailed at Newport February, 1863, says petechiæ were present in all cases.

lar in the time and variable in the character of its appearance. As a rule, perhaps, it most resembled roseola; in some instances was like urticaria; while the Germans all report herpes as of frequent occurrence. This latter was rarely seen in this country.¹ The temperature was less than is found in many fevers, rarely above 100° F. In some cases of great prostration the skin was cold and inelastic. A sickly smell as of perspiration was occasionally perceived, but in no instance seen by the Committee was there the characteristic odor of typhus fever.

With pain in the back of the neck, increased on raising the head, a strong tendency existed, especially in children, to bury the head back in the pillow. The muscles were stiff and unyielding, but in the cases seen by the Committee this stiffness could not be said to be tetanic. Many instances are, however, on record where this has been the case, and opisthotonos and other tetanoid symptoms have been present. Trismus and even general convulsions are noted by some observers. But, to repeat, cases were noticed by the Committee, and others are reported, in which these symptoms were entirely absent. Especially was this the case when the petechiæ were in great abundance and appeared very early.²

In many patients the mind was clear until a few hours before death, or even, in one or two instances, to the very last. Occasionally there was delirium of a dull, vague character, but in none seen by the Committee was there the *delirium ferox* of typhus fever. In a few the disease began and terminated in coma. Cases of this kind are well described by Professor Wood, of Philadelphia, in an unpublished essay on this disease, to which, through the kindness of its distinguished author, the Committee have had access. "In a few, relatively rare cases, the patient never rises from the first

¹ Dr. Phelps, of Brattleboro', Vt., U. S. Military Hospital, is almost the only one reporting the occurrence of herpes in the American cases. So rarely was herpes present in this country, and almost universally so in Germany, that the Committee have been disposed to suspect a different meaning had been there attached to the word from that which obtains in America.

² Sanderson says, "In the epidemic at Dantzic there were cases in which not a trace of stiffness or retraction could be noticed." From these and other facts which will be given hereafter, the conclusion is irresistible, that this disease presents two well-marked varieties, one characterized by the prominence of cerebral symptoms, the other by those of a poisoned condition of the blood. Though widely different in their extremes, these two forms run into each other in such a manner as to leave no doubt in the mind that they are but varieties of the same affection, not two distinct diseases. The German writers make three, and in some instances four varieties.

shock upon his system, but becomes rapidly weaker, with a cold, pale, mottled skin, purple extremities, a pulse more and more enfeebled until it can no longer be felt, shrunken features, and glazed open eyes, and dies profoundly comatose, sometimes as early as six or seven hours from the time of the attack." On the other hand, excessive jactitation has been reported as occurring in many cases of this disease.

A general *hyperæsthesia* of the cutaneous surface was noticed in all or nearly all the cases seen by the Committee. This appears to have been a very general symptom of the disease wherever and whenever noticed. A German writer states that "it was so marked that the mere touch of the finger would bring on spasms." Anæsthesia, which is referred to by both domestic and foreign authors, was not noticed by the Committee.

Nausea and vomiting were of very general occurrence, the matters ejected were simply the ordinary contents of the stomach, or were of a dark, green liquid, not unlike the juice of leeks. The vomiting rarely continued after the first or second day.

The tongue was moist and creamy, and continued so in the cases noticed by the Committee. It is reported as becoming dry and brown in the advanced stage of the disease.

The bowels were generally constipated, diarrhoea occurred in rare instances.

The urine, as examined by the Committee on an early day of the disease, was natural in quantity, of a yellowish-red color, of a specific gravity of 1018, slightly acid, the chlorides much diminished, and was highly albuminous. On long standing the deposit exhibited, under the microscope, mucous corpuscles, a few vesical epithelial cells, a few altered blood corpuscles, hematin flakes, granular matter, but no renal casts. This urine had been drawn off by the catheter. Retention of urine and strangury were of common occurrence.¹

In the patients seen by the Committee, *the eyes* were injected and ecchymosed. The pupils were for the most part natural. In one case there existed, in the fourth week, marked dilatation of the left pupil, with but little change in the right eye. In a child, six years old, ulceration of the cornea occurred in an advanced stage of the disease. Dr. Lente, of New York, reports the development of cap-

¹ Swelling of the parotid, though not seen by the Committee, is reported by the German authors.

sular cataract in one eye during an attack of spotted fever. A similar phenomenon is noted by Rummel and by Balkenstein in the German epidemic. Other authors report ptosis, amaurosis, a fixed look, diplopia, eyes covered with muco-pus, inflammation and sloughing of the cornea, suppuration and destruction of the eyeball.

A hardness of hearing was a marked attendant of this epidemic, even in very mild cases, and very early in the disease. Patients talked in a loud tone of voice as if not hearing their own words. Buzzing in the ear was also complained of. Purulent discharges from the ear are reported.

The respiration was in some instances natural, in others hurried. Œdema of the lungs and bronchitis are noticed by many writers. Inflammation of the lungs of a peculiar character (which will be referred to hereafter), pulmonary congestion, and pulmonary apoplexy, are occasionally reported. In the advanced stage the respiration became suspirous and occasionally even stertorous.

The heart varied greatly in its action. In some cases it acted slowly, in others tumultuously. An interesting observation made by Dr. Da Costa, of Philadelphia, was the occurrence of well-marked blood murmurs in the heart even in the early stage of the disease.¹

The pulse presented no constant condition. In many cases there was but little deviation from its normal condition, in others it was preternaturally slow, or frequent and feeble, its volume full or reduced to a mere thread.²

Duration.—In two cases coming under the notice of the Committee the disease proved fatal within twelve hours, as has already been stated, in others not until the fourth day, and in some rare cases the patients lived many weeks or even months. The Germans report cases fatal in four hours from the seizure, while in one instance the patient lived for fourteen months.

Prognosis and Rate of Mortality.—That this disease is of the gravest character has been shown in the tables already given in this paper, see pages 321 and 322. Other epidemics are reported even more fatal than those given above. It decimated the regiment under the care of Dr. Love (*vide supra*), as it did the French town

¹ See Da Costa's Medical Diagnosis. First ed. p. 615.

² Niemeyer says, "As a rule, the heart-beat and impulse showed an increased frequency from 90 to 100 or 120, and in rare cases 130 or 140. Sometimes the frequency of the pulse, as compared with the temperature of the skin, was low, but a great diminution, to 50 or 60 in the minute, if at all in this disease, belongs to exceptional cases."

of Aigues-Mortes. In a French village in 1842 of 160 sick 120 died. M. Forget says, of 195 persons attacked, 122 died. Dr. White mentions 592 deaths in 1035 cases. Of 348 cases in Oporto, 105 died. In the Swedish epidemic, of 3051 persons attacked 1387 died. In a later epidemic of spotted fever of 1909 patients 799 perished. Dr. A. P. Stone, describing an epidemic of this disease in Auburn, Mass., states that it had proved fatal in every case. So too Wunderlich reports 12 deaths in 12 cases.

Among the *sequelæ* of this disease reported by European authors are deafness, permanent or temporary, blindness, atrophy of eye, permanent lameness of lower extremity, paralysis of upper extremities, facial paralysis, difficult deglutition, difficulty of speech, weakness of mind and great loss of memory. Dr. Gallup (op. cit.) refers to similar phenomena in cases coming under his notice. He describes "a peculiar state of chronic illness as the sequel of spotted fever," occurring especially in those who had the epidemic rather lightly, characterized by lassitude, muscular debility, vague shifting pains, &c. &c.

Anatomical Appearances.—These varied greatly with the intensity, character, and duration of the symptoms during life. M. Boudin speaks, 1st, of the possible absence of all appreciable anatomical lesions; 2d, of the dissemination of anatomical lesions in the whole serous system; 3d, the finding of anatomical lesions where no signs of disease were given during life, and, finally, the tendency of the disease to produce pus. In cases coming under the notice of the Committee there were found, when the disease proved fatal within forty-eight hours, petechiæ on the exterior, and in the lining of every cavity. In two cases, each proving fatal in about twelve hours, the vessels of the dura mater were found filled with dark fluid blood. A little effusion of serum was noticed at the base of the brain, but no change in the brain substance or its meninges, or in the membranes or substance of the cord could be detected, though subjected to a careful analytical examination. In these cases, besides the universal ecchymoses, the lungs were found gorged with dark fluid blood. Soft small coagula were found in the left ventricle; while in the right ventricle the blood was thin and without coagula. Similar phenomena are reported at home and abroad.

In other instances where the disease had lasted longer, in one of some months' duration, there were found preternatural fulness of the vessels of the brain, patches of lymph on the convexity and

at the base of the brain, and upper part of the spinal cord, of an ashy-gray color not unlike the false membrane of diphtheria—the brain substance being soft. In none of these cases was pus discovered. When marked cerebral symptoms had existed during life, opacity of the arachnoid, sub-arachnoid effusion, and, it is said, "purulent infiltration, thickening of the membranes, with semi-solid exudation, containing connective tissue-cells and lymph-corpuscles have been found." In one case seen by the Committee there was an exudation with purulent deposits on the whole posterior portion of the cord from the cervix to the cauda. In seven cases reported by German writers, on the spinal cord were found several clots, the cervical portion of dura mater injected, the cauda equina imbedded in fluid pus, the cervical portion free. Exudation began at the fifth or sixth cervical vertebra. Under the microscope pus-corpuscles and finely granular fibrin were found with growths of connective tissue. Softening of the brain substance has already been referred to. Dr. Jewell reports "abundant yellow effusion in the arachnoid space, reddish serum in the ventricles, the substance of the brain firm."

Dr. J. C. Warren, in the epidemic of 1810, found in fatal cases purulent deposits in the pleura, and in the pericardium. Dr. Otman, of Carbondale, reports appearances corresponding to those of phlegmasia dolens. In some instances the respiratory organs appear to have been especially involved. Dr. Upham (op. cit.) reports the occurrence of pulmonary apoplexy. Œdema of the glottis occurred, though but rarely; œdema of the lungs was, however, of frequent occurrence. Bronchitis, with the bronchi filled up with a tenacious lymph-like exudation of a consistency sufficient in some parts to be drawn out by the forceps, was noticed at Newbern, N. C. So, too, were found in the same cases a deposit of lymph in both ventricles of the heart, and an abundance of diffuent lymph in the pericardium, sero-purulent fluid holding lymph in suspension, each surface of the pericardium covered with a layer of lymph. Sero-purulent fluid was also found in the joints. It would indeed seem as if the serous and synovial membranes of the whole body were more or less affected.

In every case the blood was fluid, even when death took place in four hours was this the case. A specimen of blood taken from a spotted fever patient and examined by the Committee presented the following appearances. The red corpuscles were shrivelled,

crenated, not in rouleaux, and numerous white corpuscles were noticed on the field.¹

A fatty condition of the liver and kidneys was found in one of the cases under care of the Committee. An enlargement of the spleen, which would seem to have been of frequent occurrence abroad, was not seen by them. The glands of Peyer are reported by several observers, both here and in Europe, as preternaturally prominent.

The Committee have, perhaps with tedious minuteness, endeavored to bring before the Association the history and characteristic phenomena of spotted fever, not only as seen in their own country and their own times, but as recorded in the earlier reports both in this country and in Europe. They cannot fail to notice a remarkable similarity in these records, though made under such varying circumstances and at such different periods. Even in their irregularities, paradoxical as the remark may seem, do they agree. What, then, is the nature of this disease, which has shown itself in three continents and among so many peoples?

It will be remembered that the only *constant* pathological condition is an altered state of the blood, one in which it fails to coagulate after death, and in which the corpuscles have undergone certain marked physical changes indicative of a diminished vitality, and that next in frequency, but by no means always present, are the intra-cranial changes already described. Death may occur without these last pathological changes,² and exudations have been found in the pericardium, the lungs, and in the joints.

Are these last true phlegmasiæ, to which is due the general constitutional disturbance, or are they consecutive to that condition of the life fluid which has been so constantly found to be diseased? Does the therapeutic test confirm the existence of true primary inflammation? Is there any parallel case of a mere inflammation prevailing throughout the world with such violence and such fatality? Questions like these would appear to have suggested themselves to the mind of the physician in almost every epidemic of this disease.

¹ Dr. Ames, of Montgomery, Ala., and one or two of the recent German writers, state that they noticed an excess of fibrin in the blood of spotted fever. It may be that this was in the advanced stage of the disease, or that it was merely relatively an excess.

² Hirsch reports two cases of this disease in which no intra-cranial exudation was found, though the disease lasted thirty-six hours.

A careful examination of the subject has left no doubt in the minds of the Committee *that the disease is essentially a fever, not essentially an inflammation*; that local inflammations, when they do occur, are consecutive to the constitutional disturbance, are due to the morbid condition of the blood provoking exudation, and that their locality is determined by incidental circumstances. In the large majority of cases the brain, with its appendages, is especially involved. Next in frequency, in the order in which they are named, will be found exudations in the lungs, the peri- and endo-cardium, and the synovial cavities. In some epidemics there would seem to be a similar tendency to exudation in the lining membrane of the larynx and pharynx.

Is this disease identical with typhus fever? On this subject much has been recently written. No ordinary force of authority has been arrayed in favor of this opinion. It is maintained by Dr. Murchison, whose work on "Continued Fevers" is undoubtedly the best in our language. It was held by the late Professor Pepper, of the University of Pennsylvania, a most accurate observer, zealous pathologist, and profound thinker. It would seem, however, that in both instances the opinion was formed by these gentlemen rather from the published accounts of others than from their own private observations. No epidemic of spotted fever had lately prevailed in London, and its recent appearance here was at a time when, from rapidly failing health, Dr. Pepper had been compelled to withdraw from active practice. On the other hand, Professor Wood, of Philadelphia, the Nestor of the profession, and Dr. Gerhard, to whom more than to any man living is due a knowledge of the differential diagnosis of typhus and typhoid fevers, are decided in their belief, a belief founded on the observation of cases coming under their immediate care and notice, of the distinctive character of spotted fever. So, too, with Professor Clark, of New York, an authority of the first order.

The Committee frankly confess that there have been times in the course of their investigations, when duly considering the arguments adduced by Dr. Murchison and others, they have been almost ready to adopt as their own the sentiments there expressed. After a further consideration of the subject, however, they feel bound to state, that though regarding spotted fever as closely analogous to, they do not regard it as identical with typhus fever.

Among the phenomena of spotted as distinct from those of typhus fever, are the suddenness of its attack, the absence of the true mul-

berry or rubeoloid rash, and the very early appearance of petechiæ. Dr. Murchison has endeavored to show that these may all be regarded as symptoms of typhus fever of a severe type. If we admit this, which the Committee are by no means prepared to do, there remains one feature which certainly does not belong to typhus fever. Reference is now made to the non-contagious character of spotted fever as it has prevailed in America. The Committee are well aware that evidence has been adduced regarded as of an opposite character in the statement that this disease was conveyed by troops on their march to towns before healthy.¹ However this may be, the Committee have failed to find the slightest evidence of the disease having been communicated by contagion from a sick to a healthy person, in any of the epidemics in this country. This accords with the more recent writers on the subject in Europe, who are almost unanimous in the opinion of its non-contagiousness. If, then, spotted fever be ever contagious, it certainly must be *very slightly so*, and only under peculiar circumstances, whereas it is well known that typhus is one of the most contagious of all fevers.²

Dr. Murchison, in discussing this subject, endeavors to dispose of the peculiarity of the rapid course of spotted fever by referring to the *typhus siderans*, or *blasting typhus*, which devastated the garrisons of Saragossa, Torgau, and Ulna, where the disease terminated fatally on the second or third day, or even in a few hours. So far from regarding it in this light, the Committee are compelled to view this epidemic from another stand-point, and believe it to have been not typhus fever, but a genuine epidemic of spotted fever, or cerebro-spinal meningitis. That it was such its whole history proves. Besides the phenomena which have already been noted, the peculiar situations in which it showed itself among young soldiers in garri-

¹ In Avignon three women attached to the hospital where it prevailed, a sister, a seamstress, and nurse, all took the fever.

Dr. Wood justly remarks, in the essay before quoted: "Admitting the fact that it has accompanied the march of troops, it does not by any means follow that it was promulgated by the sick to those in health, for, as we well know, disease may be carried from place to place by what may be considered as the germs of the cause, which propagate in a congenial atmosphere."

² The Committee wish to do justice to this matter, and therefore insert in a note the following words of Dr. Murchison. Speaking of the epidemic at Dantzic, he says: "Many cases proved fatal *before the stage occurred* at which typhus probably becomes contagious." And he adds that "Drs. Christison and Allison attended upwards of 280 cases of typhus fever in private practice without it being communicated except in one instance."

sons coincide with the history of spotted fever. Nay, more, the investigations of the Committee induce the belief that many other epidemics in garrisons, reported as typhus, were really those of spotted fever. The Committee agree with the distinguished author of "*Continued Fevers*" that the eruption of typhus usually appears on the third day or the fourth, but they are equally prepared to assert that the eruption of spotted fever, which, as has been already stated, is not a rubeoloid or a mulberry rash, but an extravasation of blood, or of its coloring principle, occurs on the first or second day, or even immediately at the onset of the disease. Nor can this be explained by the statement that the occurrence of petechiæ thus early is but an expression of a *peculiarly malignant* form of typhus fever. Mild cases of spotted fever have occurred with petechiæ, few in number, it is true, but still genuine petechiæ, from which a speedy recovery has taken place. So, too, with the duration of the disease; how rare is it for typhus fever to terminate either favorably or unfavorably in less than a fortnight. To use Murchison's own words, "The mean duration of fifty-three cases was 14.13 days, while of ten fatal cases the mean duration was fifteen days." How frequently does a fatal termination occur in spotted fever within forty-eight hours or sometimes within twelve!

And when spotted fever has been prolonged, as it not unfrequently has been for a period extending over many weeks or months, there are not found the characteristic symptoms of advanced typhus. There is the absence of the peculiar odor of typhus, and the disease has "no preferable time of crisis, but runs on indefinitely."

In the *post-mortem* appearances there are also distinctions worthy of notice. It is true that ecchymotic stains in the linings of the cavities may be found in typhus fever, but they are rare; while in spotted fever they are very frequently present, and on every hollow viscus. Dr. Murchison states (though he has very properly of late modified his opinion) that marked intra-cranial changes are never found in typhus; certainly they are rare, whereas they are of such frequent occurrence in spotted fever as to be regarded by some writers as pathognomonic.

Dr. W. H. Baltzell, of Frederick City, Maryland, in an elaborate paper on this subject, says: "Little or no importance in differential diagnosis can be attached to the irregularities in the date and frequency of the appearance of the petechial spots;" and endeavors to demonstrate in statistical tables the fact that while in cases of

typhus fever reported by Dr. Gerhard (in 1836) the petechiæ occurred in about 80 per cent., in spotted fever similar phenomena were noticed in but 60 per cent. The inferences drawn from these tables are amenable to the objection that in the typhus fever patients a very large number of cases are reported, in spotted fever there are but a few, to make the table really a representative of the true relation an equal or an approximative number of cases should have been given. Again, an important practical fact should not be lost sight of, that the cases of typhus fever reported by Dr. Gerhard were those of hospital patients in whom such a scrutiny was doubtless made as would be impossible or indelicate in private practice. Dr. Wood says on this subject: "It is highly probable that the eruption often escaped notice when really existing, as several cases of *post-mortem* examination are on record in which it was observed on the back, and parts usually covered, and on this account was not seen during the life of the patient. Though it generally appears on the face, it is sometimes absent from this part while present elsewhere, and this may have led to error in reports, especially as it was not formerly looked on as so important in diagnosis as it would now be." Of the correctness of these remarks there can be no doubt. So, too, with regard to the variation in the date of the appearance of the petechiæ, it would seem from Dr. Baltzell's own tables that while, in typhus, these were noticed in periods varying from the second to the thirteenth day, in spotted fever, out of 25 cases recorded, petechiæ appeared in 20 from the first to the third day. *Eleven of this number occurred on the first day of the disease.*

While thus holding the opinion that spotted fever is a distinct disease due to a specific cause, and having its own mode of invasion, phenomena, and course, the Committee wish again to state their conviction of its close analogy to typhus fever. Nor do they wonder that those pathologists who have been compelled to form their diagnosis of the disease from the recorded observations of others should have adopted an opinion in favor of which so much can be said. Convinced of the non-identity of the two diseases, yet equally convinced of their close analogy, they cannot perhaps better conclude the discussion of this part of the subject than by quoting these words of Dr. Murchison, written some years since, before recent attention had been drawn to spotted fever in England.

"It is very possible that the *typhoid state* may have a common

origin in all diseases, or may be due to the accumulation in the blood of the products of disintegrated tissue, as the result of the primary malady * * but true typhus fever has a mode of origin, and a clinical history of its own, which do not admit of its being confounded with every disorder which assumes a 'typhoid state.'¹

When the attention of the profession in Philadelphia was called to the existence of spotted fever, there was prevailing in that city a severe and wide-spread epidemic of *influenza* or epidemic catarrhal fever. In some instances this presented the phenomena of pulmonary or bronchial irritation, which, though not an essential, is a frequent accompaniment of influenza; in others these were wanting.

Several medical men in active practice were at once struck with the resemblance of many of the symptoms of the two diseases, and were led to inquire if influenza might not be but a milder manifestation of that epidemic influence which in its intensity produced spotted fever. Nor, it will be seen, were their symptoms very dissimilar save in degree. Suddenness of attack, intense pain in the head and back, great nervous depression associated with marked cutaneous hyperæsthesia, great præcordial distress, nausea and vomiting were common to the two diseases. So, too, were certain incidental phenomena, such as the occurrence of irregular forms of cutaneous eruptions, roseola, and urticaria, occasional glandular swellings and rheumatoid affections of the joints. This notion of a resemblance, though held by some, was ridiculed by others, and the subject does not seem to have excited much debate. The Committee do not propose to reopen this subject more than to call the attention of the Association to the interesting fact of the almost uniform coincident prevalence of spotted and of catarrhal fevers.

Such was the case in the epidemic reported by Dr. Gallup, who regarded the "two diseases as in no way differing but in degree and seat of their urgent symptoms." A contemporary writer, Dr. Trent, calls spotted fever *malignant influenza*. Dr. North says that the two diseases prevail together. The most earnest advocate at

¹ Dr. Sanderson (Med. Times and Gaz., May, 1865) says: "The facts observed at Dantzic afford no ground for believing that the disease was communicated from person to person, or that it had anything in common with typhus fever except so far as each disease was due to a specific poison; that no eruption resembling that of typhus existed; that the impairment of respiratory function was usually the immediate cause of death."

that day of the close relation of these fevers, was Dr. Job Wilson, who, in a work on spotted fever, before quoted (published in Boston, 1815), uses the following words: "The similarity of the influenza to spotted fever is so striking, that, had it not been for the occasional occurrence of spots, it is probable that the present epidemic might have continued to be called by that name." "Believing then," as he expresses it, "that influenza and spotted fever correspond in all their most important symptoms, * * * differing only in degree," he proposes the following classification—when the disease exists with simple inflammation of the air-passages, *i. e.*, our ordinary influenza, he calls it *febris catarrhalis*, when with pleurisy or pneumonia, *febris catarrhalis synocha major*, while to the third and most severe manifestation of disease he gives the name of *febris catarrhalis maxima*, or *spotted fever*. The Committee do not feel themselves called upon to discuss further the interesting relation which does undoubtedly exist between the cause of spotted fever, epidemic catarrhal fever, epidemic typhoid pneumonia, epidemic angina, and epidemic erysipelas, especially as this has been made the subject of a special committee of the Association.

They would refer those interested in this matter to the authors already quoted, to Bascome on Epidemics, to Howe on Epidemics, to Holland's Medical Notes and Reflections, to the *Dictionary of Medical Sciences*, and to a paper in *The Am. Med. Journal*, Jan. 1866. There will also be found in the writings of Boudin in France, Niemeyer in Germany, Love, Drake, Page, Condie, and others in America, notices of the coincident occurrence of these diseases. Canstatt, in *Die Specielle Pathologie und Therapie*, regarding this identity as an established fact, treats of spotted fever under the title of *epidemic catarrh complicated with the putrid or adynamic fever*.¹

¹ One of the most instructive and interesting papers on Spotted Fever lately published is that of Dr. D. Francis Condie, printed in the Transactions of the Medical Society of the State of Pennsylvania, 3d series, part 3d, p. 497 *et seq.* The opinions expressed in the text are corroborated by those of this well-known author. Such, too, from their writings on this subject, it may be inferred were the views of M. Ozanam (*Histoire Médicale*, Paris, 1817) and of M. Casimir Broussais.

Dr. Gilkrist, in his account of "Epidemic Cerebro-Spinal Meningitis" at Gibraltar, in the winter of 1843-4, says that "for several weeks before Christmas an epidemic of influenza prevailed to such an extent that few families escaped. As this began to decline cases of cerebro-spinal meningitis made their appearance about the middle of January.

That the chief pathological appearances in spotted fever may be found in the lungs rather than in the brain has already been shown.

While they do not believe that every case of pneumonia occurring with adynamic or typhoid symptoms is a form of spotted fever, or that inflammation of the lung in the course of true typhus is such, the Committee have no doubt that not a few of the epidemics known as typhoid pneumonia were really instances of this disease, the lungs instead of the brain having especially suffered.

Such was the opinion of the early writers, and such the opinion of Professor Dickson, of the Jefferson College, one of the most eloquent teachers of medicine of the present day.

In this place perhaps it may not be uninteresting to mention that towards the close of the epidemic of spotted fever, in Philadelphia, typhus fever prevailed to a considerable extent characterized by all the distinctive phenomena of that disease. The same has been noticed elsewhere.

Cause.—It would be simply absurd to refer to a local origin a disease which has prevailed simultaneously in three continents, and among people of the most diverse physical and social conditions. Leaving for the present the consideration of the ultimate cause of spotted fever, there can be no doubt that there are certain well-defined *exciting* causes, which may be briefly investigated. Cold, or rather exposure to sudden changes of temperature, undoubtedly holds a prominent place in the causation of spotted fever. It has already been shown that the disease prevailed with greatest fatality during the months of February and March (see table, p. 322). Numerous illustrations might be given to confirm this statement. Epidemics are reported by the German writers in which this disease became mild (in March) as the weather became mild, but with a recurrence of cold weather regained its former severity. Cold "snaps," as they are called, are particularly favorable to the development of this affection. Maurer, a German writer, states that at a funeral in Erlangen, unavoidably detained by bad weather, eight children accompanying the funeral took sick with this fever.

Dr. Love, before quoted, states that while the soldiers of his regiment suffered so fearfully, the Pennsylvania troops, who were encamped near by, appeared to enjoy good health. They were, however, well clothed in woollen goods, and had become better accustomed to the vicissitudes of camp life. Confirmatory of what has been stated, he adds that "the captain of one company provided his men with additional blankets and gave them liquor at New

Orleans, while the captain of another company, with unusual military ardor, marched his men about the streets of Vicksburg; in the first company there were *nine* deaths from spotted fever, in the last there were *twenty-four*! The disease first showed itself during very inclement weather; the encampment was covered with mud and water, the blankets and clothing of the men saturated with water, a terrific storm of rain next occurred and flooded anew the encampment, while early next morning the cold north wind came sweeping down from the broad bosom of the Mississippi, bringing with it a storm of sleet and of hail." One man of every ten of the regiment perished of spotted fever. February and March, though not necessarily the coldest months of the year, are perhaps those of the greatest vicissitudes of temperature. Nor should it be lost sight of, in connection with the appearance of the disease in these months, that after the privations of a long winter season, the absence of fresh meats, and especially of fresh vegetables, the blood may be so impoverished as to render the system peculiarly obnoxious to disease. While the poor have often been among the first victims of spotted fever, in other instances it has especially chosen these from among the strong and vigorous. Thus, in the epidemic of Philippeville, in Algeria, the *Maltese porters* were the chief sufferers; so, too, it has been noticed with healthy young farmers or peasants; and Dr. Upham, agreeing with the statements of other writers, reports his cases as occurring among the most robust of the young soldiers. One of the first to perish of this disease in Philadelphia, during the late epidemic, was a well-known physician who had scarcely reached middle life, whose health had been previously good. Dr. Chapman makes the remarkable statement that the three greatest teachers of medicine this country had produced, Drs. Rush, Wistar, and Dorsey, each died of this disease.¹

That the disease is frequently found in the camp and garrison has already been incidentally noticed, but there are instances on record in which the military in a town have escaped, while the civil population have suffered greatly. It should also be borne in mind that in the camp large numbers of the sick are under the eye of one medical man, and opportunities are thus afforded for careful

¹ There is abundant testimony to prove that *fatigue* acts as a predisposing cause of this disease. It may have been that in the instances given in the text, the very fact that the subjects of the disease were especially strong and vigorous led them to undertake an amount of labor, with its consequent fatigue, which would not have been attempted by persons of less vigorous organization.

observation, comparison, and study of disease, while in civil practice the distribution of patients often renders this almost impossible.¹

But all the conditions which have been mentioned may exist without necessarily developing spotted fever. There must be, therefore, some essential cause of this disease the nature of which has thus far escaped our detection. We call this unknown cause *epidemic influence*, a name convenient, but inexpressive. While it should stimulate to further investigation, it were perhaps better for men frankly to confess their ignorance of that which their present means of observation have failed to determine.

Treatment.—When spotted fever appeared in the early part of this century, two methods of treatment, very dissimilar, were adopted. In the one, and that one recommended by the Boston committee, the lancet was freely employed, with the whole antiphlogistic treatment. Yet, while recommending the lancet, this committee limited its use to these two conditions: 1st, when there is *phlegmonous* inflammation, or nearly of that character, affecting the brain and its membranes, with violent symptoms; 2dly, when the brain is suffering from pressure from the fulness of its vessels. Perhaps the most earnest advocate of the lancet was Dr. Gallup, but even he does not name it as suited to every case of the disease. Contemporary with these writers, but opposed to their teachings, was Dr. Elisha North, of Connecticut, who appears to have founded his treatment upon an extensive practical knowledge of the disease. He strongly urges the use of stimulants internally and externally, such as warm water applications, blisters to the neck, laudanum, hot brandy sling, heated wine, warm teas, with the local application of warm blocks of wood or warm bottles. "I am strongly of the opinion," says he, "that this disease requires stimulating remedies, but by this I do not mean that every patient must take brandy by quarts, or wine by gallons."

The same diversity of opinion which characterized these earlier writers has continued to exist until the present time; and of the many authors already quoted, one class as earnestly advocates bleeding as the other violently denounces it. In the recent German epidemic, to which allusion has so often been made, the lancet was freely used, and though it does not seem to have been followed by very satisfactory results, yet Niemeyer, one of its most distin-

¹ Gaskoin, in describing the epidemic in Portugal, attributes its cause to exhalations from heaps of dung and farmyard stuff.

guished advocates, justifies its continued use on the plea that "it is no argument against this view that bloodletting has not been efficacious, for in bad cases all treatment is valueless, and in mild cases antiphlogistics were useful."¹

In the recent epidemic in the United States the lancet has been used by a few practitioners, and they assert with partial success. But the great weight of testimony is opposed to bloodletting in this disease. Opium, which is highly recommended by Boudin, Chauffard, and other French authors, is as strongly urged by some of our native writers. It is a significant fact that in almost every epidemic of this disease there has been testimony given of the value of opium. On the other hand, belladonna is not without advocates equally as decided. This last remedy, like ergot, has been recommended and exhibited on the physiological theory that it will cause contraction of the capillaries in the brain, thus preventing exudation and its consequences. Very favorable results are reported of its use conjoined with the tincture of the chloride of iron. Sulphite of lime and of soda are favorably named. Chlorate of potassa, iodide of potassium, arsenic, calomel to salivation, carbonate of ammonia, permanganate of potassa, tincture of cantharides pushed to strangury, veratrum viride, aconite, each has its advocates. Locally, ice to the head, blisters to the neck, frictions with turpentine, subcutaneous injections, and moist or dry heat, have been resorted to. A favorite remedy, both with the people and to some extent with the profession in New England, was the application of billets of wood which had been boiled in a decoction of the leaves and boughs of hemlock, at the same time a warm infusion of the leaves was given as a drink. More recently ether and chloroform have been used by inhalation. In regard to the administration of no one medicine have such differences of opinion obtained as respecting the sulphate of quinia. By one set of writers it is vaunted as almost a specific; by another as worse than useless. So far as the personal experience of the Committee is concerned, it has impressed them favorably, and, given in large doses, at the *very beginning* of the disease, has seemed to them in some instances to abort the attack. Such, too, is the assertion of Dr. Gilbert and many other of contemporary writers. But the in-

¹ M. Chauffard lost 30 cases out of 31 under antiphlogistic treatment, and M. Besseron lost 21 out of 22 patients by the same. Broussais says "one large bleeding is the sovereign remedy."

vestigations which this report has led to have shown the Committee, it must be confessed to their own surprise, that recent writers, by a vast majority, are opposed to the exhibition of large doses of this drug; some declaring that it never does good unless there be a malarial complication, while in other instances its effects have been of a most disastrous character.

In this conflict of opinions, it is fortunate for the sick man as for his physician, that there are certain great principles of therapeutics which underlie the science of medicine and which must ever form the basis of a judicious and successful treatment.

If the disease under consideration be, as the Committee have endeavored to show, a fever of a typhous character closely allied to that of true typhus, due, in other words, to a poison which has vitiated the blood, and which is circulating with this fluid to every part of the economy, affecting successively the functions of the various organs, it is evident that the same general principles of treatment must obtain in this as in typhus fever. Efforts must be directed to the elimination of the poison, the relief from pain, and the support of the patient. The Committee may, perhaps, without presumption, be permitted to say in a few words what seems to them to be a treatment founded on sound therapeutical principles, and which, so far as their observations go, appears to have been attended with a good degree of success.

In the first stage of the disease the patient should be placed in a *hot* bath (not a *warm* bath, but a *hot* one, temperature 102° — 6° F.), and this should be done by careful nurses without any expenditure of strength on the part of the patient. After this he should be briskly rubbed with coarse towels, and placed in bed on a warm blanket. If a tendency to coldness of the surface exist, benefit may be derived from friction of the surface with warm oil of turpentine, and at the same time, especially if there be a torpid condition of the bowels, an enema of turpentine may be given. If prostration be decided or imminent, alcohol or ammonia may be freely given. If the pains be severe, the hyperæsthesia excessive, the jactitation distressing, opium, or one of its alkaloids by the mouth, or by hypodermic injection, may be given in decided doses. If this be not demanded, in the *very beginning* of the disease quinia in large doses may advantageously be exhibited. But this does not apply to that later condition in which the phenomena all point to the actual occurrence of intra-cranial exudation; here quinia, except in small doses as a tonic to an enfeebled system, can be of no use,

and may prove hurtful. In those cases in which cerebro-spinal symptoms are prominent from the first, certain other measures may be resorted to; these are the use of pediluvia, ice or snow to the head or back of the neck, or in bags to the spine.

While the Committee fully believe that the use of the lancet is in the vast majority of cases not only uncalled for but highly pernicious, they can yet conceive it possible that occasional instances may occur in which benefit may be derived from the cautious application of cut cups to the back of the neck, a practice justified by results in analogous cases of typhus fever. On sound therapeutical grounds, the tincture of the chloride of iron, the mineral acids, and the oil of turpentine, may be used if the stomach will bear them, but it is of first importance that this organ should be left undisturbed by any perturbing medicines. When the disease has assumed a chronic form, with unequivocal evidences of cerebral exudation, the iodide of potassium, or the iodide of iron, appears to promise most favorably. Blisters to the neck and down the spine, though highly recommended by some writers, have not, in the hands of the Committee, been attended with satisfactory results. If the inferences drawn from recent physiological experiments be correct, it may be that ergot and belladonna will hereafter be found useful in spotted fever.

The experience of the past would, however, indicate that many cases will prove fatal in spite of the most judicious treatment.

It has doubtless been noticed that the Committee, in referring to the disease under consideration, have for the most part made use of the appellation *Spotted fever*, the name popularly given it when it appeared in the early part of this century. They have done so because it seemed to them quite as accurate as any other, and, using the word as synonymous with petechial, more truly suggestive of the nature of the disease. The name of *cerebro-spinal meningitis* has been thought to be more scientific, and, it is maintained by some, better expresses the pathology of the disease. Such is not the opinion of the Committee. If, however, this term be used at all, when meant to apply to this affection the prefix of *epidemic* should never be omitted.* The use of the termination *ite* or *itis* is uniformly accepted as indicating a disease essentially of *inflammation*. It presupposes in favor of a pathology and of a course of treatment which the whole tenor of the preceding pages would indicate as inapplicable to this disease.

The name of *cerebro-spinal meningitis* applied to this fever is

* This is not merely a distinction of words, but a matter of practical importance.

Cerebro-spinal meningitis is an acute inflammatory disease requiring prompt and decided antiphlogistic treatment. *Epidemic cerebro-spinal meningitis*—so called—is a febrile affection, of a typhous character, to which such a course of treatment is entirely unsuited. There can be no doubt that cases of the former have been mistaken for those of the latter disease, and observations made, and erroneous inferences drawn, which a proper discrimination would have prevented.

amenable to the objection that belonged to Bretonneau's name for typhoid fever—*dothineritis*. The most earnest advocate for this name, in fact so far as the Committee know, the only author who has urged its appropriateness upon the profession is Professor Stillé, of Philadelphia. In a paper on this subject read before the Philadelphia College of Physicians, marked by the learning and polish which characterize all his writings, he offers an elaborate train of reasoning in favor of this name.¹ Without going into any lengthened discussion of this argument the Committee cannot but think it may be refuted by his own illustration. "Typhoid fever," says he, "presents, in addition to those elements which belong to typhus, symptoms of intestinal disease, and corresponding lesions. When these were thought to be the source of all the phenomena, it was called *entero-mesenteritis*. But further observation showed that a fatal termination of an attack might occur before ulceration of Peyer's glands had taken place, and hence that this ulceration was a consequence of the essential morbid process of the disease, and not its effect, . . . hence the affection acquired the name of *typhoid fever*. But this was a step in the opposite extreme for the new name had no reference to the anatomical character of the disease—the alteration of the mesenteric and intestinal glands. A further modification of the nomenclature was demanded, and the name of *enteric fever* proposed by Dr. Wood was adopted at home and abroad, thus proving that it expresses better than any former denomination the peculiar double character of the disease." . . . On the same principle spotted fever "offers a peculiar anatomical lesion which entitles it to be designated as *meningitis* with the prefix of epidemic or typhoid." Surely the able author of this paper could not have carefully examined his own argument, or he would have perceived that while, perhaps, analogically it might justify the appellation to this disease of epidemic cerebro-spinal *fever*, it would not authorize that of epidemic cerebro-spinal *meningitis*. Typhoid fever was not named by Dr. Wood *enteritis*, but *enteric fever*, so this disorder, on the same principle of nomenclature, should not be designated epidemic cerebro-spinal meningitis, but *epidemic cerebro spinal fever*, a title which has been applied to it by more than one writer. Were it not that cases often occur in which the lungs and the heart are especially affected, this name might be an appropriate one.

¹ See Am. Journal Med. Sciences, January, 1865, p. 121.

M. Boudin, speaking of this disease, says, "The name *meningitis* is born of the anatomical prejudices of modern medicine, and of an incomplete examination of its facts;" he calls it *cerebro-spinal typhus*, and Valleix, who has written the best paper probably in any language on this subject, says he has preserved the name of *epidemic cerebro-spinal meningitis* because it is that by which it is generally known, but he warns the reader not to be thus led into the error of supposing that the essential and only character of the malady resides in inflammation.

Dr. Wood, in the paper before quoted, has adopted the title of *petechial fever*, and treats of the disease as such. It is not probable that by this name, or that of spotted fever, the disease could now be confounded with typhus fever; and even if it were, no grave error of therapeutics would be likely to result; a statement which cannot be made of it were it regarded as essentially meningitis.

In concluding their report, the Committee do not pretend to have presented all that can be said on the subject referred to them. They trust, however, that most of that which is historically and practically valuable has been arranged in such a manner as to facilitate further research on the part of those who may be interested in the subject. They feel that they owe an apology to the members of the Association for so long taxing their attention during the reading of this paper, but they found it impossible to do justice to such a subject in a petty report.

The truth is, the literature of spotted fever embarrasses by its riches, and the Committee have been surprised that a disease so well known as this was to their fathers should have been regarded by the men of this day as novel and peculiar to their times. It needed but to brush aside the dust of half a century to find in the old books which have been quoted all or nearly all that is now known respecting it. So from the dust of Pompeii men are daily exhuming those marvellous works of art which, until thus discovered, were supposed to be the peculiar invention of the present day!

PHILADELPHIA, May 1, 1866.

The following authorities have been consulted in the preparation of this report. While the Committee do not claim that the list includes the names of all who have written on this subject, they believe that it represents the greater number of papers on spotted fever which have appeared during the present century. It is presented in this place in the hope that it will facilitate the labors of those who may be engaged in the study of this disease.

AMERICAN.

The Report of the Committee of the Massachusetts Medical Society on Spotted Fever. By Thomas Welsh, M. D., James Jackson, M. D., and John C. Warren, M. D. Read June, 1810. Mass. Med. Com., vol. ii. p. 111.

A Treatise on a Malignant Epidemic commonly called Spotted Fever. By Elisha North, M. D. New York, 1811.—This work contains, in an appendix, letters on this subject from physicians in various parts of New England. The author also quotes from the inaugural thesis of Dr. Nathan Strong, On Spotted Fever.

An Inquiry into the Nature and Treatment of the prevailing Epidemic called Spotted Fever. By Job Wilson, M. D. Boston, 1815.

Sketches of Epidemic Diseases in the State of Vermont, &c. By Joseph A. Gallup, M. D. Boston, 1815.

A Review of "Hale on Spotted Fever," Philadelphia Medical Journal, vol. i. p. 167 (supposed to have been written by Dr. N. Chapman). Philadelphia, 1820.

Elements of Medicine, &c. By Samuel Henry Dickson, M. D., &c. Philadelphia, 1855. Page 317, art. *Pneumonia Typhoides*.

Lectures on the Theory and Practice of Physic, &c. By John Bell, M. D., and William Stokes, M. D. 4th ed. vol. ii. p. 515, art. *Epidemic Cerebro-Spinal Meningitis*. Philadelphia, 1848.

On Cerebro-Spinal Meningitis as it occurred at Montgomery, Ala. By Dr. S. Ames. (Pamphlet.) 1848.—*Ib.*, New Orleans Medical and Surgical Journal, Nov. 1849, p. 295.—A Melancholy History of the Cold Plague, &c. By Dr. Thomas N. Love. *Ib.*, Jan. 1848.—On Cerebro-Spinal Meningitis. By Dr. J. M. Page. *Ib.*, 1858.

A Systematic Treatise on the Principal Diseases of the Interior Valley of North America. By Daniel Drake, M. D. 2d series, p. 751.—Dr. D. quotes, besides the authors named elsewhere, Drs. Richardson, Western Journal, Dec. 1842; W. W. Boling, N. O. Medical Journal, May, 1847; J. C. Gray, Western Lancet, May, 1846; B. J. Hicks, N. O. Med. Journal, July, 1847; B. F. White, *ib.*; Bell, Western Lancet, 1847; C. Chester, N. O. Med. Journal, 1847.

A Practical Treatise on Diseases of Children. By D. Francis Condie, M. D., &c. (Art. *Epidemic Cerebro-Spinal Meningitis*.) 3d ed., p. 409. Philadelphia, 1859.—Dr. C. quotes, in addition to authors named elsewhere, Dr. Phillips, Med. Examiner, vol. x. p. 64.

A Treatise on the Practice of Medicine. By George B. Wood, M. D., &c. Art. *Petechial Fever*. 6th ed. Philadelphia, 1866.

Southern Medical Reports. By Dr. Fenner. Vol. ii. p. 17. New Orleans, 1851.

Report of Two Anomalous Cases of Disease. By David Crary, M. D. Med. Com. Connecticut Med. Society. New Haven, 1862.

Hospital Notes and Memoranda Illustrative of Cerebro-Spinal Meningitis. By Dr. J. Baxter Upham. (Pamphlet.) Boston, 1863.—*Ib.*, Boston Medical and Surgical Journal, April, 1863.

American Journal of the Medical Sciences.—Spotted Fever occurring in the Vicinity of Philadelphia, by Dr. Wm. W. Gerhard, July, 1863. Communications on this subject to the Philadelphia College of Physicians, by Drs. Packard, Lamb, Levick, Hartshorne, Atlee, Jewell, Stillé, and Gilbert, A. D. 1863–4–5. Communications on the same subject to the Journal, by Merrill, April, 1864; Burns, April, 1865; J. R. Black, April, 1865; W. H. Baltzell, Oct. 1865; P. S. Wales, Jan. 1864; John A. Lidell, U. S. V., Jan. 1865; Eddes, Jan. 1865.

Boston Medical and Surgical Journal.—Drs. A. P. Stone, No. 40, p. 201; R. K. Stone, *ib.*, p. 209; H. O. Jewett, *ib.*, p. 333; Luther Parks, March, 1864; Russell, May, 1864; Kay, June, 1864; J. N. Borland, May, 1865; Holbrook, June, 1865; C. G. Page, Sept. 1865; J. S. Greene, Nov. 1865; Chandler, p. 207; Ellis, p. 381; Bowditch and Palmer, 1865.

Chicago Medical Examiner.—Prof. N. R. Davis, July, 1863; J. S. Greene, July, 1864; John Bartlett; J. Adams Allen.

Buffalo Medical and Surgical Journal.—Dr. E. S. Jenks, Oct. 1863.

St. Louis Medical Journal.—Paper on Spotted Fever, Jan. 1865, by Dr. F. J. Prewett.

Cincinnati Lancet and Observer.—On Spotted Fever, by Dr. Pearce, May, 1864; Dr. Bartholow, July, 1864; J. J. Rooker, July, 1865.

American Medical Times and Gazette.—Papers on Cerebro-Spinal Meningitis or Spotted Fever, by Drs. W. Frothingham, April, 1864; A. P. Woodward, May, 1864; Frederick D. Lente, July, 1864; Leber and Werth, May 7, 1865.

Bulletin of the New York Academy of Medicine.—Vol. 2, Nos. 15–18, p. 245 *et seq.*, paper on Cerebro-Spinal Meningitis, by Dr. Wm. H. Draper. Dr. D. quotes, in addition to authors quoted elsewhere, Drs. Kendall and Squire, Trans. N. Y. Med. Society, 1838; M. Tourdes, Histoire de l'Epidémie de Méningite Cérébro-Spinal, etc., Strasbourg, 1843; M. Faure-Villar, Histoire, etc., Paris, 1840; Dr. Henry Fish, Trans. N. Y. Physico-Med. Society, 1809; Dr. Phelps, U. S. Military Hospital, Brattleboro, Vt.; M. Chauffard et M. Corbin, Gazette Médicale de Paris, 1848; MM. Billery, Maillot, Coulier, Lefevre, Chapuy, and Dr. Charles Burr.

Philadelphia Medical Reporter.—Papers on Spotted Fever or Epidemic Cerebro-Spinal Meningitis, editorial, vol. xii. p. 287; report of a committee, Burlington, N. J., vol. xii. p. 167; papers by Drs. Bundy, Holloway, A. C. Thornton, Beaver, A. T. Woodward, vols. xii., xiii.

San Francisco Medical Journal.—Dr. H. Parke, Jan. 1865.

Transactions of the Medical Society of Pennsylvania.—1863, papers by Drs. Corson, Reid, Poley, Dunlap, and Oliver; 1864, by Anderson, Leedom, Green, Condie (who quotes Thatcher's "Practice"), Nebinger, Ottman, and McConaughy.

Transactions of the Illinois Medical Society, May, 1864.—Dr. McVey.

Transactions of the American Medical Association, 1865.—Report on Epidemics and Climatology, by Dr. D. F. Catlin, of Connecticut.

BRITISH.

An Account of a Singular and Fatal Disease. By Mr. Henry Gervis. Communicated by Dr. Curry. *Med.-Chir. Trans.*, London, 1813, p. 236.—Review of Marques on Military Surgery, *ib.*, Jan. 1864.

London Medical Gazette, vol. ii. p. 455.—Gilkrest on Epidemic Cerebro-Spinal Meningitis, London, 1844.

Dublin Journal, &c.—Darby on Cerebro-Spinal Arachnitis, April, 1846.

Dublin Quarterly Journal, &c.—Mayne on Cerebro-Spinal Meningitis, 1846, vol. ii. p. 95.

Medical Times and Gazette.—Correspondence and editorial, pp. 401, 429; discussion in *Pathological Society*, p. 479; Epidemic at Sunderland, 1830, by John Scott, M. D., p. 515; editorial, p. 521; Observations on Epidemic Cerebro-Spinal Meningitis in Portugal, by G. Gaskoin, M. D., p. 621; *ib.*, Sanderson, Epidemic at Dantzic.

London Lancet.—Wilks on Cerebro-Spinal Meningitis, Am. ed., July, 1865; On Cerebro-Spinal Meningitis, and on the Relation of Typhus to Epidemic Cerebro-Spinal Meningitis, by Charles Murchison, M. D., &c., *ib.*

FRENCH.

Histoire Médicale générale et particulière des Maladies Épidémiques, Contagieuses, et Épizootiques, etc. Par J. A. T. Ozanam. Paris, 1817. Tome i., p. 259.

Guide du Médecin praticien, etc. Par F. L. I. Valleix. Tome ii., 4 ed. Paris, 1860.

Traité de Géographie et de Statistique Médicales et des Maladies Endemiques Par M. Boudin. Paris.

See also, in the French language, the authorities quoted by Dr. W. H. Draper. See also, on this subject, papers by M. Guersent and M. Broussais.

GERMAN.

Schmidt's *Jahrbücher*, Band 129, Jahrgang 1866, No. 1.—*Febris recurrens und epidemische Cerebro-Spinal Meningitis*, von Dr. H. Meissner. Dr. Meissner quotes, in addition to those already named, Drs. Rusack, Lindstorm, Huss, Grissolle, Gawaloski, Niemeyer, Barth, Klein, Wenz, Arnold, Härle, v. Ulmer, Horing, Kamm, Maurer, Lindwurm, v. Pfeufer, Böhme, Preu, Kuttlinger, Reuter, Merkel, Fronmüller, Fabrice, Dotzauer, Galler, Braun, Wibmer, Oppolzer, Braumüller, Ullman, Bortstieber, Wunderlich, Pfeiffer, Plagge, Arrigler, Salomon, Schuchardt, Baring, Scheller, Mende, Schirmer, Litten, Rummel, Fricke, Zülchauer, Meschede, Kreitmar, Knapp, Beckh, Reidel, Bensberg, Trettenbacher, and Hermann.

Chovstek—*Wochenblatt der Zeitschrift der k. k. Gesellschaft der Aerzte in Wien*, Sept. 6 und Oct. 18, 1865—quotes, in addition to the above, Rollet, Elbogen, and Friedrich.

APPENDIX.

The following are the letters referred to in the early part of this report:—

From Prof. Traill Green, of Easton, Pa.:— (See page 311.)

SPOTTED FEVER.—I have had, in all, eleven cases well-marked, though a number of fatal cases have since been viewed as the same disease, but were not so recorded at the time. In all these cases death ensued, with one exception, a delicate boy 11 years old, with opisthotonos, delirium, intense pain at the back of the neck, and great prostration. In his case I first employed my usual treatment for intense neuralgic pain, and with most marked success. His recovery was rapid and complete, leaving no sequelæ.

Case 1, æt. 20 years, died on the sixth day, in strong convulsions. The opisthotonos so complete that the body could not have been more arched. No interval of consciousness from the inception. No treatment appeared to have the slightest effect.

Case 2, æt. 9 years, died in a few hours. Conscious, but pulseless from my first visit. No treatment of any importance.

Case 3, æt. 53 years, colored, died on the tenth day. Had been under treatment for several days for rheumatism. Insensibility soon came on, with great tenderness at the nape of the neck and along the spine, the slightest pressure causing the most violent shrieks.

Cases 4 and 5, brother and sister, æt. 18 months and 8 years, died on the fifth and sixth days. Inception sudden in both; the first sick two days before the sister, who was liable to convulsions, was attacked. The most active treatment was instituted, the only result being to procure partial, but temporary, relief for the patients. Stimulants were freely given and retained. Stimulating frictions were employed to the spine and nape of the neck. The spots in both cases were enormous, and covered nearly the whole surface.

Case 6, æt. 9 months, appeared, after a severe struggle, to yield to treatment, but continually relapsed. When she improved, she was ravenous for the breast, milk-punch, beef-tea, &c., which were given as freely as possible. In this case the disease appeared to assume a chronic form. I quote from my notes:—

“Eva D., æt. 8 months, from both strong and healthy, living in a healthy locality, of healthy parents, and under the most happy auspices. The mother, who had plenty of good, rich milk for it, was free from any of those harassing cares and anxieties so particularly incident to the present time. The attack commenced April 29, with great nausea and vomiting, low grade of fever, followed in a very few hours by opisthotonos, agonizing pain, and

convulsions. With slight change, the case continued for two weeks, when convalescence seemed to ensue. In two days a relapse occurred, and with improvement and relapses she continued, slowly emaciating, apparently unconscious, ravenously taking the breast, milk-punch, beef-tea, &c., with occasional intermissions of such marked improvement as to cause a favorable prognosis, only to be blasted in a few hours. On the thirty-first day she was much emaciated, unconscious, sucking the fingers or the bottle in a ravenous manner, swallowing large quantities of beef-tea, &c., which passed almost unchanged; the head drawn far back, occasional slight convulsions, surface cold, pulse rapid and feeble. She died on the fifty-fourth day. Strabismus came on about the fourth week, and increased so that the pupils of the eyes were almost hidden internally."

Case 7, æt. 11 months, of poor parents, died on the fourth day. Nursing careless, and treatment not carried out.

Case 8, æt. 35 years, colored. Insensible from the first. No effect from treatment. *Post-mortem* revealed great congestion at the base of the brain, and some softening.

Case 9, æt. 11 years, died on the third day. Spots profuse at first visit; delirium early; pain intense; no opisthotonos or convulsions. Death seemed to result from the great prostration, although immense quantities of milk-punch were taken and retained.

Another case, æt. 21, was dying when I arrived. At my request, the family physician was summoned, who confirmed my diagnosis. Stimulants externally and internally were freely used, but without any apparent effect. Death ensued in two hours, or about seven hours from the first appearance of disease.

A similar case, æt. 15 months, occurred in the same way. I was summoned in the night, in the absence of the physician. The child died in about seven or eight hours. No treatment was possible under the circumstances.

In addition, I have recently encountered several cases strongly resembling this disease, but which I have hesitated to call by that name. In all the sickness was ushered in by sudden slight nausea, intense neuralgic pain at the back of the neck, more or less delirium, and great prostration. The treatment consisted in the free administration of stimulants, and belladonna and hyoscyamus in full and frequently repeated doses. All recovered. This was the same treatment employed in the case above mentioned which recovered. So impressed am I by this result, that I have determined, while continuing my former treatment, in future to procure as speedy relief as possible from the pain, by these remedies, pushed to their furthest limits. In two instances, adult patients have taken every hour, and with the happiest result, one and a half grain of extract of hyoscyamus with one-third of a grain of extract of belladonna. One case, a healthy, strong machinist, aged 30 years, took six grains of the latter and thirty grains of the former before he obtained relief from his excruciating agony. For seve-

ral days he remained with strabismus, slight aberration of mind, though attending when addressed by any one, as if with an effort, and with a most voracious appetite. He rapidly recovered his strength, and, at the end of two weeks from the relief first being obtained, returned to his usual labors.

These cases were regarded by the friends and others as cases of spotted fever, a view coincided in by several practitioners to whose knowledge they were brought. I have hesitated to claim them as such, and have preferred to bring them to your notice in this manner.

I have seen no reason to believe the disease is in any way contagious, or that it was materially modified by age, sex, or temperament. In those cases which recovered, no tendency has been observed to a second attack; all are now in their usual health.

EASTON, May 29, 1865.

Since the fourteenth day of April, we have had six cases of spotted fever, making sixteen cases, of which seven have died, six recovered, and three remain under treatment.

We have a case to report from the interior of the county, at Bath, ten miles from the district in which all the cases of 1864 and 1865 occurred, with this exception for 1865.

Of the fatal cases, one was treated by a homœopathic doctor, and two had passed beyond the reach of remedies before medical aid was called.

Spotted Fever as it occurred at Easton, South Easton, and Glendon Iron Works, Pa.—The figures refer to the questions of your circular.

1. March 12th, 1864, the first case occurred in South Easton; May 18th the last case was observed—patient in Easton.

2. Symptoms such as are now considered characteristic of the disease—no unusual symptoms were observed.

3. Did not attack many individuals at the same time, and was not modified by age, sex, or temperament.

4. Most of the fatal cases terminated within twenty-four hours, and before reaction could be produced. Relapses were not common after convalescence had commenced, but the patients remained feeble several months.

5. We have no evidence that the disease was communicated from one person to another. We seldom saw more than one case in the same family.

6. We could not discover any predisposing or exciting causes. Attacks were sudden; men in good health were seized while pursuing their usual avocations, females while at rest at home, and children in school.

7. No unusual complications were observed here, and those who recovered did so perfectly.

8. We had none but the usual diseases of the season when

spotted fever prevailed, and no epidemic diseases have followed it, with the exception of rubeola and pertussis.

9. Thirty-nine cases occurred here. Of twenty-eight cases early treated, six died. Death occurred in another case after convalescence had commenced, with symptoms similar to those of the early stage of the disease. One died after he left Easton apparently well, whose condition at the time of death I have not learned. The remaining eleven cases did not have timely treatment, or were under the care of irregular physicians; seven of these died.

10. We used alcoholic stimulants freely, with quinine and iron. Sinapisms and blisters were applied to the spine and extremities, and opium or morphia was administered to quiet nervous excitement, allay pain, or produce sleep.

11. We did not have opportunities for making post-mortem examinations.

12. None made.

13. The disease never occurred here before, so far as we can learn.

The disease extended two miles along the Lehigh River, from Easton on the northern side of the river, and South Easton on the southern, to Glendon Iron Works—no cases were observed beyond the distance of two or three squares from the river bank. The hygienic condition of a majority of the families in which it occurred was good.

Feb. 10th, 1865, the disease appeared again at Glendon, two miles above Easton, and to this day, April 14th, ten cases have occurred, of which three have died. The treatment pursued has been the same as that of 1864. In one well-marked case I have added the sulphite of soda to the remedies previously employed. The rigidity of the muscles of the neck, which was very great when I prescribed the sulphite, was promptly relieved, and convalescence from that time was very manifest. I shall hereafter employ it in all cases that may come under my care, but will continue the use of tonics and stimulants to preserve the vital forces until the sulphite can act upon the secret cause of the disease. I am also persuaded that frequent and free doses of opiates produce good effects in the early stages of the disease, not only in relieving pain, but by their stimulating properties.

In one of the cases of this season the spots very closely resembled the eruption of rubeola, while all the other symptoms were those observed in the best marked cases of spotted fever.

In speaking of its reappearance at Glendon, I should have said, it passed from thence to South Easton, and Easton, and one of the ten cases reported occurred in Phillipsburg, N. J., directly beyond the Delaware from Easton. I shall be happy to answer any questions you may desire to present.

From Dr. A. Douglass Hall, of Philadelphia, Surgeon to Wills' Hospital, A. A. S. U. S. A., &c.:—

CEREBRO-SPINAL MENINGITIS.—*Death on the Sixth day; Autopsy.* John B. Muzzey, aged 35, a new recruit, was admitted into the Filbert St. U. S. A. General Hospital, April 7th, 1864, from the Broad St. barracks near by, with so-called spotted fever.

The man was brought into the ward in a state of coma; the only account to be obtained of him, was that given by the attendants bringing him, and which was in effect that he had been taken sick two days previously with terrible chills, and pain in his back and head.

His whole body was covered with purplish red spots, of varying size, one being incidentally noticed on the right conjunctiva scleroticæ.

In their distribution, the spots were single, and in clusters, as to the period of their appearance nothing could be learned, the man not being conscious, and the barrack attendants not having noticed them.

The condition of the patient at this time was as follows: The eyes were closed, the head thrown back, but not markedly so, moderate amount of rigidity of the muscles, labored respiration, counting at 24 in the minute, pulse 66, full and slow, unable to protrude his tongue.

Placed in a hot bath he recovered sensibility enough to ask "where all this water came from;" removed to bed, and rubbed briskly over the whole surface with tincture of capsicum, he broke out into a profuse perspiration.

The basis of treatment to consist of whiskey, ten ounces per diem, and quina, four grains every two hours. Beef-tea and milk as much as he can digest in the day and night.

Evening. Pulse better, 84, passed his urine without the catheter, stupid, unable to articulate. Six ounces of blood were taken from the neck, and ten grains of calomel in butter placed on the tongue.

April 8. Has had a motion of the bowels, and again passed water naturally, talks rationally, and says that he feels better, skin moist, pulse 84, tongue covered with a moist, creamy fur. Respiration 32 per minute. Sat up in bed propped with pillows, told me his place of residence, shook hands warmly with those around him, and thanked them for their attention. Whiskey reduced to six ounces, and quina to ten grains per diem.

9th. 10 A. M. Inclined to sleep; pulse 96, full and hard; skin hot and dry; tongue dry and brown, anorexia; ordered wine ten ounces per day, in place of whiskey, and quina to six grains.

Evening. Pulse 96, full and hard; subsultus tendinum; abdominal respiration; involuntary evacuations; cupped to six ounces from nape to neck, followed by a blister to the nape, and to the extremities.

10th. Perfectly comatose; sighing respiration counting 44 per minute; pulse 117, full and hard; pupils insensible to light; toes of

left foot contracted strongly toward the sole. Spots almost entirely disappeared; temperature 96° under the tongue, 102° in the axilla.

3 P. M. continued to sink rapidly, and died quickly, without any convulsions, at 3 A. M., April 11th.

Autopsy thirteen hours after death.—Body presented the appearance of a large muscular man; a few of the spots, of a much paler hue, were to be seen on the lower extremities.

Brain.—Vessels of dura mater turgid with blood; the whole arachnoid and pia mater coated with coagulable lymph of a greenish hue one-sixteenth of an inch in thickness; this was greatest on the inferior vermiform process of the cerebellum.

Lateral ventricles filled with bloody serum; choroid plexus injected; two ounces of bloody serum were found at the base of the brain, and welling out from the foramen magnum.

Spinal Cord.—Membranes deeply injected; a thin deposit of lymph upon the posterior surface of the pia mater, extending from the medulla to the cauda equina; the cord itself appeared to be normal.

There was hypertrophy of the left ventricle of the heart, slight fibroid thickening of the mitral valve. At the apices of the lungs were old cicatrices; the bases were hypostatically congested.

The spinal cord was submitted to Prof. Leidy for microscopical examination, who gave me the following report.

"The abundant lymph-like exudation of the sub-arachnoid space is composed entirely of pyoid corpuscles. The pia mater was highly injected. The cord itself appeared not to be altered."

From Dr. D. Webster Prentiss, A. A. Surgeon U. S. A.:—

"STANTON" U. S. A. GENERAL HOSPITAL,
WASHINGTON, D. C., Feb. 8th, 1865.

The first case was private Jas. K. Hayes, Co. "C," 10th Regt. V. R. C. By nativity an Irishman. He was admitted to the hospital Jan. 8th, 1865, apparently much debilitated, dull headache and heavy appearance. Was an intemperate man; had been on debauch previous to present illness, to the effects of which the symptoms were at first attributed. The next morning, however, the head symptoms increased, and cerebral congestion began to be apparent; coma supervened during the night, and the patient died comatose at 3 P. M. on the 10th. During the time the pulse and tongue were very little changed, and the bowels regular. Treatment carb. ammoniæ gr. v every three hours—and co. cath. pil. iij.

Autopsy held twenty hours after death.—Rigor mortis well-marked. Calvaria removed, skull thicker than usual; no sign of violence. An effusion of blood and serum in the cavity of arachnoid at side of right hemisphere of cerebrum; clot formed—compressing cerebrum to three-fourths its original size. Substance of brain healthy, with its veins very much injected. Blood abnormally fluid. Aortic valves of heart slightly indurated; otherwise healthy. Lungs

healthy except old pleuritic adhesions. Other organs not examined.

In this case the immediate cause of death was in the compression of the brain. There were no "spots" on the skin, but the fluidity of the blood and course of the disease point to *cerebro-spinal meningitis*.

The second case is much more distinctly marked, an eruption of true ecchymoses existing over the whole body. Private Robert Redick, Co. "F," 1st N. Y. L. Art.; aged 32; a Canadian. Admitted into the hospital Jan. 31st, 1865, at 8 o'clock P. M., and died two hours after. Symptoms presented: great nervous prostration; pulse at wrist almost imperceptible; *intense dyspnœa*; dull, heavy feeling about head, and dull pain between the shoulder blades; face livid; lips purple; extremities cold. Treatment—stimulants internally; mustard to extremities; cold to head; frictions with whiskey and warmth generally.

Autopsy held twelve hours after death.—Patient of full habit and fleshy. Bloodvessels of brain very much congested; effusion of about one ounce of serum into cavity of arachnoid; one ounce into each ventricle of cerebrum; and about two ounces at base of brain. Structure of brain healthy; weight of cerebrum $2\frac{1}{8}$ lbs. Pacchionian bodies largely developed, but healthy.

Spinal cord and its membranes *healthy*. Heart normal, full size; clot of fibrin in right ventricle. Both lungs intensely congested and both considerably collapsed—the left being more so than the right. No pneumonia. Bronchial tubes filled with a mixture of serum and frothy mucus, which evidently caused the collapse. Liver normal; weight $4\frac{3}{4}$ lbs. Gall-bladder distended with three ounces of viscid dark-colored bile.

Spleen congested—weight seven ounces. Stomach and bowels distended with flatus; healthy. Kidneys and bladder normal—latter contained one and a half ounce of slightly albuminous urine.

Blood was remarkably fluid in all parts of the body; no blood clots were found except a few small ones in the lungs, giving evidence of pulmonary apoplexy. Spots of true ecchymoses were present over the whole body varying in size from one fourth of an inch to three-fourths of an inch in diameter. After death blood settled in all depending portions of the body.

The immediate cause of death in this case was *asphyxia*. A most interesting circumstance to me in these two cases is the manner in which death took place in each. To my mind there is no doubt that they were both examples of the same disease, "cerebro-spinal meningitis," yet in the one death was caused immediately by *cerebral* congestion and apoplexy, while in the other it was due to *pulmonary* congestion and apoplexy. There was in neither case any acute inflammation of the meninges of the brain, though in both we had the effusion, which was evidently due to the engorgement of the vessels and great fluidity of the blood. There was not in the latter case any congestion or inflammation of the kidneys, as

in the cases reported from this hospital by Dr. Lidell; and the albuminous urine might have been due to an oozing out into the bladder through its mucous membrane, of the serum of the blood. The kidneys in the former case, unfortunately, were not examined.

From John Swain, of Ballardsville, Oldham Co., Ky.:—

DR. LEVICK: Inclosed please find the answers to questions in the *Medical News and Library* for January, 1865, upon the subject of "spotted fever." I know but little, consequently cannot impart much.

In answer to your first question.—The first case of "spotted fever" in my practice appeared on the 9th day of December, 1863, a servant of the Hon. Robert Mallory. I had three cases among his blacks—the second on the 15th of May, 1864, and the third on the 23d of December, 1864. My third case in order occurred on the 4th day of October, 1864, a white infant. These cases were all within forty rods of each other, three within ten feet, two in the same cabin. The last two have an interval of five months between them; the last of these, and the one in the adjoining cabin, an interval of seven months. The four cases were all upon the west side of Floyd's Fork, about 160 rods from the stream, upon a limestone soil and substratum. This stream is usually dry in the months of July and August, but has a current at all other seasons. There is a dam across the stream about half a mile below, about due south, but the space is interspersed with several belts of timber.

In answer to the second question.—The first case, a black girl about 18 years of age, had a cold stage on the first day, with no fever or other complaint; but on the second day violent delirium set in without warning, requiring four men to hold her, in which condition she continued until she died in a convulsion on the third day. Tongue moist, with a thin white coat; constant nausea and frequent vomiting; bowels constipated; skin and respiration normal; pulse 90, and full; could not see the pupil. Head drawn back second day; third day, opisthotonos to such an extent that her heels touched her head. No spots.

In the second case, a black boy 11 years of age had a chill on the first day, without fever or further complaint until the second day, when he became suddenly comatose, and continued so for ten hours, after which he could be aroused, but could not answer intelligibly. Skin cool and dry; head drawn back; slight opisthotonos; tongue moist, with a thin white coat; frequent vomiting; refuses food; bowels constipated; pulse 90; respiration normal; pupils normal. In which condition he continued, with the exception of a gradual improvement of the intellectual faculties, up to the ninth day, when he was quite rational; without nausea; appetite improved, asks for food; muscles of the back less tense. Continues to improve up to the fifteenth day, when he is able to get out of bed and feed himself; can bow his head as low as ever, with effort

and some pain; perfectly rational and cheerful; tongue, skin, and respiration unchanged. On the seventeenth day he is suddenly stricken down with hemiplegia of the right side, with low, muttering delirium, a cold, clammy sweat, pulse small and weak. From which time he gradually sank, and died in four days, or the twenty-first of his sickness. No spots. (Spots, when present, can be distinguished as certainly upon the black as the white.)

The third case was a white child of 18 months. Had been dull for a week; pupil slightly contracted, lids closed, light evidently oppressive; tongue with a slight yellow coat; nausea, with diarrhoea; restless and moaning. This continued without change to the fourth day of my visit, when red spots the size of a pea, without elevation, presented themselves. Spasms set in, with opisthotonos, followed by death within twenty-four hours.

My fourth case was a black female 26 years of age, the mother of three children. She made no complaint until a few moments before she became comatose, when she could not be aroused by any effort for twelve hours; after which, upon her name being called, she would awake as from a deep sleep, answer any question correctly, and make rational inquiries, then quietly sink into an apparent pleasant slumber. Pulse and respiration normal; tongue white; bowels constipated; skin pleasant; pupil normal. On the second day, nausea and occasional vomiting; free epistaxis (which recurred on the fifth and ninth days); complains of soreness in all the muscles of the body; pain in the back; head slightly drawn back; spinal muscles tense. In which condition, with very little change, she continued until her death, on the eleventh day of her disease, with the exception of a loss of volume and increased velocity in the pulse on the eighth day, when it ran up to 100, and continued to increase to 120 on the day of her death, which closed with convulsions.

Answer to the third question.—No two cases at the same time. Cannot say what class is most liable. These are the only cases within a circle of ten miles, three of which are black, one male and two females, robust and healthy, two sanguineous and the other sanguino-bilious; the other case, a white boy, delicate, of nervous temperament.

Answer to the fourth question.—Duration three, twenty-one, twelve, and eleven days. No relapse, unless you can make out one in the second case.

Answer to the fifth question.—I see no evidence that it was communicated from one to the other without a long incubation, as the three cases in the one family were separated by five and seven months respectively.

To the sixth question I can give no elucidation; all is dark. I send you a meteorological table, from which you will perceive there was every grade of temperature; although the barometer stood below the rain point nearly all the time, yet no great amount

of rain fell; nor did the hygrometer show a humid state of the atmosphere, notwithstanding the prevailing winds were southerly.

The seventh question is answered in the history of the cases.

In answer to the eighth question.—In May I had some few cases of typhoid fever; measles prevailed to some extent the whole season. In October and December I had scarlet fever in two families, six cases in all; it was during the course of these cases that the last two occurred. Since then, dysentery has been somewhat prevalent.

Answer to the ninth question.—All four of my cases proved fatal, and usually terminated with convulsions.

Although not required, I propose, as briefly as possible, to give the treatment in each case. In my first, I applied cups to the temples and nucha; obtained some six or eight ounces of fluid blood, which *coagulated*; ice to the head; blister to the nape; gave alterative portions of calomel, and moved the bowels with oil and turpentine; but no abatement of symptoms.

In my second, I immediately cupped the temples; applied a blister the whole length of the spine, which vesication I kept up for nine days; shaved the head, and applied an ice-cup; kept up a constant application of capsicum and turpentine to the whole surface during his illness; gave him four grains of carb. ammonia every four hours, and fifteen drops tinct. cantharides three times a day; whiskey toddy every two or three hours; gave a free dose of calomel at the onset, and moved his bowels every other day with oil and turpentine. His improvement commenced from the drawing of the blister. When hemiplegia set in, I put him on strychnia and phosphoric acid in addition.

My third case I gave alterative portions of calomel, Dover's powder, and morphia, kept head cool, and mustard to the spinal column.

In my fourth case I applied cups to the temples and nape; cut off the hair; applied ice-cups; blistered over the spinal column its whole length; rubbed the surface frequently, as much as she could bear, with capsicum and turpentine; kept these all up through the course of her disease. Gave her three grains of carb. ammonia and four grains of opium every four hours, and twenty drops of tinct. cantharides three times a day; moved the bowels every other day with oil and turpentine. She became rational at the filling of the blister.

The cantharides did not produce strangury in any case.

Meteorological Table for each Case.

Time of Observation—7 A. M., M., 9 P. M.

(Prepared by JOHN SWAIN, M. D., of Ballardsville, Oldham Co., Ky.)

	THERMOMETER.			BAROMETER.	HYGROMETER.	RAIN.	PREVAILING WINDS.	CLOUDS AND RAINY DAYS.
	Mean	Max.	Min.						Mean.	Mean.	Amount.
1863.								
CASE FIRST.								
Dec. 6	32	37	28	29.49	20	.....	N. E.	9 and 10, rainy days.
7	43	50	30	29.41	20	.....	E.	
8	41	45	36	29.32	19	.....	S. E.	
9	44	48	40	29.34	20	.....	S. W.	
10	46	48	44	29.27	20	.....	S. W.	
11	54	58	49	29.11	22	0.3500	S. W.	9, 10, 11, clouds stratus.
1864.								
CASE SECOND.								
May 13	58	70	52	28.89	20	.....	S. W.	Cir. and st. clouds.
14	53	58	50	28.92	19	0.1600	S. W.	Rain clouds stratus; rain.
15	63	64	62	28.98	19	.....	S. W.	Clouds cu. st.
16	63	68	60	28.99	19	1.0300	S. W.	Clouds stratus; rain.
17	64	68	60	28.96	20	.....	S. W.	Clouds cu. st.
18	71	76	59	28.95	20	.....	E.	* Clouds variable and clear.
19	69	73	63	29.05	19	.....	S. W.	Variable and clear.
20	72	82	62	29.11	18	.....	S. E.	Hazy and variable.
21	74	82	65	29.08	19	.....	S. E.	Hazy all day.
22	78	86	70	29.07	19	.....	S. W.	Hazy all day.
23	70	83	68	29.06	19	.....	S. W.	Cir. and cu.
24	70	68	63	28.90	20	.....	S. W.	Cir. cu. and cu. st.
25	64	68	62	28.87	20	1.3900	S. W.	Cu. and st.; rain.
26	64	70	54	28.88	20	.....	S. W.	Cir. and cu. st.
27	66	75	62	29.00	19	.....	N. W.	Variable and clear.
28	62	70	58	29.15	19	.....	N. W.	Clear and variable.
29	62	67	54	29.16	19	.....	S. E.	Clear.
30	69	78	58	29.13	19	.....	S. W.	Clear.
31	75	82	70	29.15	18	.....	S. W.	Variable.
June 1	76	82	69	29.12	19	0.1500	S. W.	Cir. and st.; rain.
2	61	64	59	29.11	20	.....	Southerly.	Variable.
3	64	72	56	29.14	20	.....	S. E.	Variable.
4	68	77	60	29.07	19	.....	N. W.	Clear.
CASE THIRD.								
Oct. 2	56	58	55	29.17	21	.....	E.	Stratus 10.
3	62	67	55	29.18	21	.....	S. W.	Stratus.
4	67	74	64	29.17	21	0.4025	S. W.	Stratus; rain in night.
5	57	58	56	29.11	21	1.4025	N. E.	Stratus; rain all day.
6	61	67	57	28.94	22	.....	S. W.	Variable.
7	58	63	51	28.98	19	.....	Westerly.	Variable.
8	43	48	40	29.13	20	.....	Westerly.	Cumulus.
CASE FOURTH.								
Dec. 23	12	23	3	29.16	26	.....	N. W.	Clear.
24	26	31	19	29.20	26	.....	Westerly.	Clear.
25	44	48	40	28.89	26	0.0750	S. W.	Stratus 10; rain.
26	40	41	34	28.78	27	.....	S. W.	Stratus 10.
27	43	46	40	28.58	27	.....	S. W.	Stratus 10.
28	26	30	28	28.82	26	Snow.	N. W.	Stratus.
29	25	30	18	28.83	26	.....	N. W.	Stratus.
30	25	30	17	28.80	26	Snow.	S. W.	Stratus.
31	13	19	10	29.18	25	.....	N. W.	Clear.
1865.								
Jan. 1	14	20	5	29.25	25	.....	S. W.	Variable.
2	30	36	24	29.13	25	.....	S. W.	Stratus.
3	30	34	27	29.14	25	Snow.	S. W.	Stratus.
4	25	31	20	29.24	26	.....	S. E.	Fog.

You have the condition (meteorological) of the atmosphere two days before the advent of the first case, one day before the second, two before the third, and two before the fourth. There seems to be but one constant condition of any of the instruments, that is the wind-vane. The prevailing winds were southerly.

From Dr. M. M. Eaton—

PEORIA, Jan. 24, 1865.

DR. JAS. J. LEVICK.—*Dear Sir*: I notice in the *Med. News and Library* of January, that you request that medical men throughout the United States send to you their experience with "spotted fever, so-called." I refer you to the *Chicago Med. Journal*, Vol. 21, No. 7 (it being July, 1864); in it you will find an article from me, placing the opium treatment above everything else in its treatment. I was the first to use it in this section, and I have had great reason to continue the practice. Nine out of thirteen cases of my own recovered, the four that died were treated by others for about thirty-six or forty hours, without opium and died. All of my cases that I treated with opium within twenty-four hours recovered. This has also been the experience of all who have used it as I directed, so far as I know. I claim to have published the first article recommending it as the main reliance in this disease, since the present epidemic has been upon us, though old writers recommended the same treatment, and latterly a few have timidly spoken of its virtues.

John A. Lidel speaks well of this treatment in the January number of the *American Journ. Med. Sciences*. I have interested myself much regarding it, and hope that such a furor may be made about it, as to lead many, nay, all to use the opium treatment promptly and fearlessly, and if as good success attends their practice as I have experienced, and have been lately assured by others has been theirs, they may well be satisfied. Its cause and pathology are still in obscurity, but I do not think the proper treatment is.

From Dr. J. L. Mills, of Millburn, Lake Co., Illinois:—

DR. J. J. LEVICK.—*Dear Sir*: Noticing an article in the January number of the *Medical News and Library*, soliciting information respecting the so-called spotted fever, I cheerfully give what information my experience enables me to. In the winter of 1863 and 1864, this disease came under my notice; the symptoms are headache, vomiting, pains in the bones and back, high fever, flushed face, furred tongue, anxious looks, in severe cases delirium commencing in six hours from time of attack, bright red spots appear about the same time, coming and going, lasting from twenty-four to thirty-six hours; patient cannot bear to be touched, screaming out at the least move; great thirst; if any complaint is made, it is of the head and neck. About the time the spots make their appear-

ance, the head is thrown backwards and the neck remains stiff, until death relieves the sufferer, or recovery begins to take place, which is on the fifth or seventh day; then the neck gradually assumes its natural position. The average deaths were three out of seven. Six cases out of ten were children from seven to twelve years of age; the disease proving more fatal in males than females. Relapse not common. One boy seven years of age was delirious almost from the first, his vital powers rapidly sank, and he died in forty-eight hours. I know of no instance where the disease was communicated from one to another. Sudden cold seems to be an exciting cause. All who came under my treatment were very bilious; excretions completely locked up. I found no complications except irritation of the lungs. Measles and typhoid fever prevailed the previous winter. My mode of treatment at the commencement of the disease, mild chloride mercury gr. xv, followed in two hours with senna tea, until the bowels are freely acted upon. At this time apply a blister to the nape of the neck, after which give Dover gs. to quiet every two hours, and cause diaphoresis; chlorate potassa freely in drinks; warm gruels, supporting treatment. Quinine, mur. tr. ferri xv gts. every six hours. Anodyne applications to the spine, as chloroform, belladonna, aconite, arnica, and morphia, alternated by sponging with tepid or cold vinegar, or spirits and water, completing the cure by invigorating and equalizing the circulation and nervous functions. Since I have adopted this plan of treatment nearly all recover. I believe the disease to be a malarious poison in the blood, so affecting the nervous centres by the excrementitious matter retained in the blood, exhausting the vital powers, and rapid sinking and death by coma. Microscopical examinations of blood found to contain pus, urine, and bile.

From Dr. A. G. Field, of Des Moines, Iowa:—

February 12, 1865.

DR. J. J. LEVICK—*Dear Sir*: Having recently had occasion to make a report to the Polk County (Iowa) Medical Society, on cerebro-spinal meningitis, I take therefrom such items as seem to be demanded by the questions of your Committee as published.

1. So far as I know, it has prevailed only in the southern part of this State. At Corydon (the county-seat of Wayne County) it broke out about the 15th of January, 1864, and prevailed more or less until the 1st of March following.

2. Most cases commenced with a chill, followed with some fever, pain in the back part of the head and spine, and vomiting; the pulse small, gradually increased in frequency until it became irregular or intermittent; the pupils, rather contracted at first, subsequently became dilated and insensible to light; the tongue first coated with a thin white fur, which became brown or black, and the color of the tongue dark red or livid; the countenance pinched,

and the nervous system very irritable; convulsions in some cases. Opisthotonos occurred in nearly every case, but no other form of tetanus. The eruption was that of a rash, disappearing upon pressure; no ecchymosis. In some cases there was a general cutaneous soreness, so that the patient would not bear to be handled without much complaint.

3. It did not attack any number simultaneously. The first cases terminated fatally in a shorter time than subsequent ones. All cases except one occurred in children, mostly males under twelve years of age. The exception was a female aged seventeen, who lived two weeks.

4. Most cases terminated fatally in less than thirty-six hours. The duration of the disease was from seven hours to two weeks. There were no relapses.

5. Have no evidence that the disease was either infectious or contagious, although in most families where it occurred there was more than one case.

6. Don't know what was either the predisposing or exciting cause. It seemed to have no partiality for either rich or poor, but in proportion to the intelligence of the victim was the violence of the attack, as a general rule.

7. No complications. In one case, partial deafness was regarded as a sequela.

8. No epidemic followed, but sporadic inflammatory and congestive diseases prevailed to some extent at the same time.

9. It was treated with mercury, blisters, and cold locally, anodynes and quinia, without any success worth mentioning.

10. The proportion of fatal cases was very large—at least nine-tenths.

11. There were no *post-mortems*.

12. No microscopic examinations.

13. It never prevailed in that locality before.

Last winter was one of extraordinary severity in this State. Cerebro-spinal meningitis prevailed in the coldest weather, when the snow was deeper than ever before known.

In 1857 I had an opportunity to see the disease as it prevailed in Tishomingo County, Mississippi. The treatment was the most *heroic antiphlogistic*. General bloodletting to decided syncope, followed by a blister to the back of the neck, cold to the head, and nauseating doses of emetic tartar or ipecac combined with three or four grain doses of calomel, repeated every three hours until the pain in the head abated; *after which the patient had nothing to do but get well*. Nearly every case so treated recovered, while nearly every other case, treated even antiphlogistically, with less vigor, died. Most cases were in the persons of white adults. There, as in this State, the disease occurred in the coldest weather, when there was a deep snow (for that country) on the ground. That was in a non-malarious district. So is Corydon high and dry prairie.

With our present lights, we conclude in favor of the most vigorous antiphlogistic treatment, believing that the antiphlogistic plan may have failed in the hands of some for want of sufficient energy in its application.

I shall gladly communicate any further facts to the Committee, if in my power.

